



SEAL-O-SAN'S SIDE OF THE STORY

IS YOUR SIDE OF THE STORY

PREVENTS ACCIDENTS

Pulled tendons or sprained ankles rarely happen on a Seal-O-San floor because the 100% non-slippery surface permits quick starts and sudden stops without undue strain on leg muscles.



PERMITS A FULL SQUAD

With a squad unhampered by injuries, and with all players reporting for practice, your coaching job is greatly simplified because every player receives the full benefit of your instruction.

IMPROVES TEAMWORK

With a fast, non-slippery floor to play on, you're well on the way to a successful season. Your team grasps fundamentals easily, teamwork improves, offense functions smoothly.



INCREASES GATE RECEIPTS

When your boys flash championship form on your beautiful Seal-O-San floor, you win the support of every "fan" in the community. Your team plays before packed houses yelling for them to win.

GIVES MORE VICTORIES

Watch those plays of yours "click" with speed and zip. No danger now of skids or falls. See how confidently your boys pivot, dribble, and shoot, and pile up the points that spell victory.



ENHANCES COACH'S PRESTIGE

Everybody admires a winner. When your team triumphs regularly, you earn a reputation as a winning coach. You hold the respect of players, students, alumni, and fellow coaches.

REDUCES MAINTENANCE COSTS

When your squad mops Seal-O-San on, it seals the surface. Dirt, moisture, and rubber burns remain on the surface—easily removed with a dustless mop. Costly scrubbing is seldom needed.



PROVIDES FOR NEW EQUIPMENT

By reducing floor maintenance costs as much as 50%, Seal-O-San helps you stretch athletic department appropriations to the limit. The money saved by Seal-O-San buys new equipment for your gym.

The HUNTINGTON LABORATORIES Inc.

DENVER

HUNTINGTON, INDIANA

TORONTO

SEAL-O-SAN

THE SEAL AND FINISH MADE EXPRESSLY FOR GYMNASIUM FLOORS

SCHOLASTIC COACH

Reg. U. S. Pat. Off.

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RIDDELL MOLDED BASKETBALL



The Riddell molded ball has the feel and reaction of the stitched ball. The bladder can be removed.

Introductory prices for the 1938-39 season:

No. "A"	
Grooved ..	\$10.00
No. 1	
Grooved ..	8.00
No. 2	
Smooth ..	7.00

BASKETBALL SHOES



THE "56"

No. 56—Black leather upper, black sole. Good-year welt construction, shock-absorbing inner-sole, no side-slipping.

SCHOOL PRICE - - - - - \$4.50

No. 57—White leather upper, non-marking sole, same construction as No. 56, same desirable features.

SCHOOL PRICE - - - - - \$5.50

No. 56 equipped with white sole—School Price \$5.

Riddell basketball shoes can be resoled at the factory—School Prices:

Black Sole	\$1.75
White Sole	2.00

TRACK SHOES

STYLE S—Our finest model University shoe. A light, but very durable glove-fitting yellowback Kangaroo sprint shoe. Hand-turned construction.

SCHOOL PRICE - - - - - \$6.00

STYLE N—A hand turned shoe made of very fine grade of Athletic Tan leather. Fits like a glove.

SCHOOL PRICE - - - - - \$4.75

STYLE T—A good durable track shoe. Upper made of tough Athletic Tan leather that insures fit, comfort and resists perspiration.

SCHOOL PRICE - - - - - \$3.50

STYLE J—Field or jumping shoe of a grade corresponding to Style S. Has counter and two spikes in heel. Our very best yellowback field shoe.

SCHOOL PRICE - - - - - \$6.50

STYLE 75—A very strong shoe of welt construction. Highest grade oak soles. Made of Athletic Tan leather. Two spikes in heel.

SCHOOL PRICE - - - - - \$5.00



STYLE S

1259 N. WOOD ST. **JOHN T. RIDDELL, INC.** CHICAGO ILLINOIS

Take ~~PERSPIRATION~~ off your schedule

*—and reduce the hazard
of colds in your squads*

Safeguard the health of your players by giving them shirts that absorb and evaporate perspiration quickly. Garments made of ordinary cotton yarn cannot do this. But garments of Durene mercerized cotton yarn can and do! Laboratory tests by U. S. Testing Co. prove that they absorb and evaporate perspiration twice as fast as garments of ordinary cotton yarn. A garment of Durene yarn keeps the body cooler, more comfortable and reduces the danger of chills, colds, muscular stiffness and chafing.

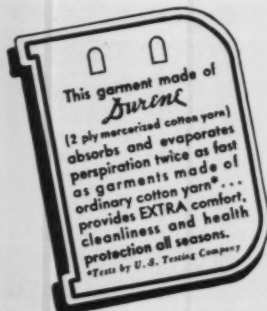
Garments of

Durene

2 Ply Mercerized Cotton Yarns

Keep Athletes Cleaner, Cooler, More Comfortable!

~~~~~This Tag is Good News~~~~~

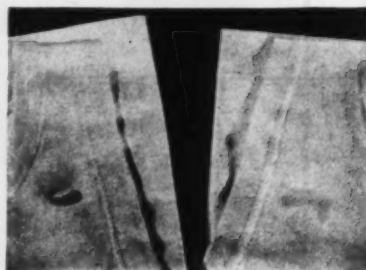


You will find this tag on garments made by manufacturers who use Durene mercerized cotton yarns. Every director of athletics and physical education should see that his purchases of knitted cotton garments are made of Durene yarn so his players will feel and look their best. Garments made of Durene yarn keep players cleaner, cooler and provide health protection both on and off the playing field. Durene yarns are found in the best knitted undershirts, trunk shorts, supporters and hose. For a list of manufacturers using Durene yarns write us.

DURENE ASSOCIATION OF AMERICA

Dean Hill, President

468 Fourth Avenue, New York



*A drop of water
tells the story!*

At left: when a drop of water is placed on a shirt of ordinary cotton yarn it remains on the surface. At right: when a drop of water is placed on a shirt of Durene mercerized cotton yarn it is instantly absorbed and quickly evaporates!

SCHOLASTIC Tennis Awards

THE 1939 National Scholastic Tennis Tournament is now open to all high schools and junior high schools in the United States. Strictly intramural in nature and designed to encourage the playing of tennis on the part of the student body as a whole, this tournament is put under the complete control of the individual school.

While the school runs the tournament, Scholastic supplies the awards. This year the winners of both the girls' and boys' tournaments in each school will receive a medal, suitably inscribed, that is something entirely new in the way of awards. Free draw charts will also be awarded to every school holding a tournament.

There is no entry fee, no obligation, nor any red tape attached to entering. A letter addressed to: Tennis Editor, Scholastic, 250 East 43rd St., New York, N. Y., applying for admission to the tournament, and signed by any member of the staff—will be accepted as an entry. Application may also be made by checking "TENNIS TOURNAMENT ENTRY" in the coupon on page 40.

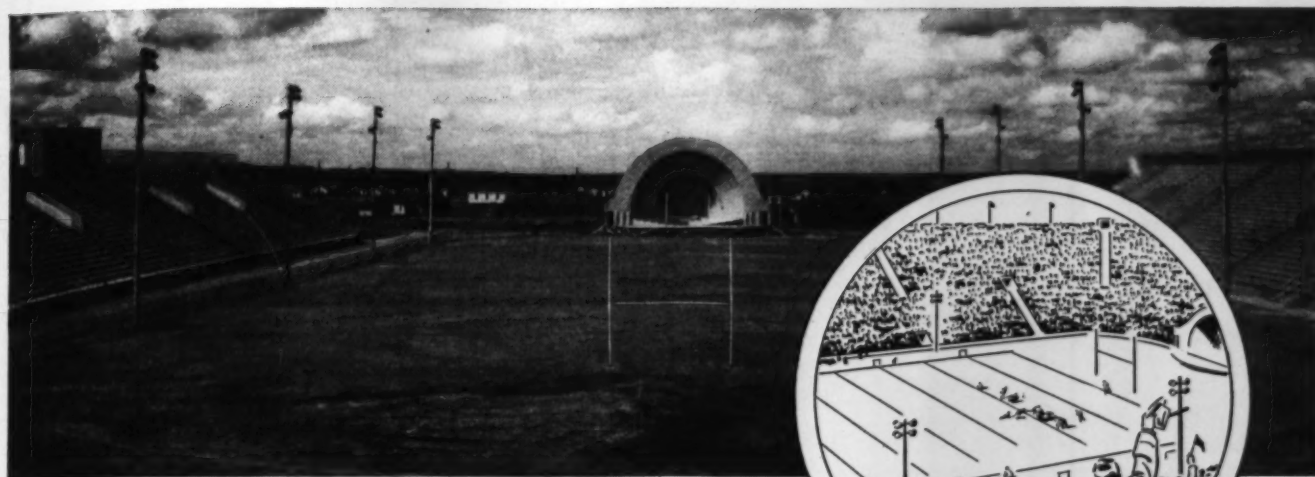
When applying for entry, specify whether there will be a tournament for boys only, girls only, or both a boys' and a girls' tournament. Register your school now, whether you are holding a spring or a fall tournament.

MASTER COUPON

ON THE last page of Scholastic Coach in the Master Coupon are listed each month the advertisers in this magazine who offer free literature or samples to those in the athletic field who are seeking further information on these products. This coupon is the quick, convenient link between the manufacturer and the reader, and persons checking the squares have all their requests promptly filled.

Scholastic Coach each year is reaching a greater number of readers and, consequently, the requests for information increases in proportion. All this involves a vast amount of extra time and labor. Our readers can help lighten the load by double checking their coupons before sending them in.

Scholastic Coach passes through a number of hands after it reaches the schools. To insure the validity of all requests we are asking our readers to see that the Master Coupon is filled out by those directly interested in the products listed.



Let them *Hear..*

as well as *See!*



Spectators of games, track meets, musical concerts and pageants at Taft Stadium, Oklahoma City, Okla. (top of page) get double enjoyment by hearing what takes place on the field—as well as seeing the action. This stadium is equipped with an RCA Victor Public Address System with speakers mounted on the poles shown on both sides of the field. (Above) Close-up of RCA speaker similar to those in use at Taft Stadium.

Many College Stadiums Equipped with RCA Victor Public Address Systems

Recent installations include the athletic fields of the following colleges and universities:

NOTRE DAME UNIVERSITY • KANSAS STATE COLLEGE of AGRICULTURE • UNIVERSITY of ILLINOIS UNIVERSITY of WISCONSIN • UNIVERSITY of KENTUCKY • SOUTHERN METHODIST UNIVERSITY AGRICULTURAL and MECHANICAL COLLEGE of TEXAS



RCA Victor

SOUND SERVICE FOR SCHOOLS

RCA Manufacturing Co., Inc., Camden, N. J.
A Service of Radio Corporation of America

An RCA Victor Public Address System in your stadium or gymnasium will bring thanks from those who attend your sporting events, concerts and pageants—and your attendance figures will be greatly increased!

No matter how good their seats may be, spectators attending events at your stadium are never close enough to the action taking place on the field.

You can bring them closer—win their thanks and, as a result, draw bigger crowds—at low cost.

How? With an RCA Victor Public Address System—which enables spectators to hear what's happening—as well as see it!

Systems of this type are being installed in all modern athletic

fields and gymnasiums. *Because it pays.* RCA Victor can accommodate the needs of all schools—from the smallest portable indoor installation in auditorium or gymnasium, to the largest outdoor installation. We shall be glad to give you complete information and prices on request. Or, we'll send a sound expert to your school for consultation about your particular requirements. Just fill in the coupon below. You incur no obligation of course.

Modern schools *stay* modern with RCA radio tubes in their sound equipment.

Listen to the "Magic Key of RCA" every Sunday, 2 to 3 P. M., E. S. T., on the NBC Blue Network.

EDUCATIONAL DEPARTMENT, (CO-1)
RCA MANUFACTURING CO., INC., CAMDEN, N. J.

Kindly send me my free copy of your illustrated booklet "Sound Service for Schools" and further information about
☐ Indoor Sound Equipment. ☐ Outdoor Sound Equipment.

Name _____

School _____

Address _____



YES, ATHLETES HAVE CHANGED...

and so have Certain Basic Ideas about a Good Training Diet!

Maybe the "Handlebar Moustache" era thought a hot cooked breakfast was necessary in winter. But you know that whether whole wheat is served hot or in a ready-to-eat form like Wheaties its "heat-energy" content remains the same! For year around training, eat a "Breakfast of Champions!"

Way back when a turtle neck sweater covered many a hearty appetite, athletes used to think that a good breakfast for winter training had to be hot to be nourishing.

Today we know that's not the case at all. Actually, it's not the heat of *cooking* that keeps you warm in cold weather. It's the number of "heat-energy" units in the food that counts!

That's why we say you're doing yourself a real good turn when you call for Wheaties these chilly mornings—a generous bowlful of those crisp-toasted whole wheat flakes with milk or cream and fruit. That's a "Breakfast of Champions"—the ready-to-eat "heat-energy" breakfast hundreds of modern athletes are eating this winter.

You see, those crunchy Wheaties flakes are *whole wheat*, brimming with important food values, including a big supply of "heat-energy" units we need when Old Man Winter is doing his darndest to wear down our stamina and energy. *And the*

whole wheat in Wheaties furnishes the same number of needed "heat-energy" units as an equal serving of the same grain would supply in hot cooked form!

What's more, Wheaties bring you whole wheat in a new form that's especially tempting to the appetite—crisp, golden-brown flakes that *look* so good to eat and *taste* so good that millions of people now enjoy Wheaties morning after morning.

Enjoy This "Breakfast of Champions" Tomorrow!

A big bowlful of Wheaties, milk or cream and fruit is a complete, well-rounded meal in itself—one that provides many food values needed by growing athletes the year around. Muscle-building proteins! Those important minerals, calcium and phosphorus! Vitamins A, B, C and G! And a wealth of food-energy, the "food-fuel" that's the largest single requirement in a good training diet!

Tell your players about this delicious, "heat-energy" dish, a "Breakfast of Champions." Enjoy it yourself these winter mornings! You'll find those orange and blue packages of Wheaties at your grocery store. Ask for several today!



Wheaties and advertising claims for them are accepted by the Council on Foods of the American Medical Association.

WHEATIES

WITH MILK OR CREAM AND SOME FRUIT

"Breakfast of Champions"



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"**H**ERE y'are, folks, ya can't tell the bowl games without a score-card." This might well be the cry of the hawkers on New Year's Day. For we doubt whether there is anyone who can rattle off the names of all the "footbowl" games that are being played these days.

Our master sheet tells us that no fewer than nine of these extra-curricular classics were played this year. And it was only yesterday that the only bowl game worth the notice was the Rose Bowl game at Pasadena. Nowadays if you mention that so-and-so played in the bowl, you have to be prepared to answer the question, "which bowl?" It may be the Rose, Cotton, Sugar, Sun, Orange, Peach, Kumquat, or Finger bowls. And if it wasn't for a couple of bad breaks we may have had some more of the things.

The Eastern Bowl, tentatively scheduled for Jan. 2 in New York, was called off by its promoters because of "bad weather." (*California papers please note.*)

The Coal Bowl at Charleston, W. Va., was abandoned because nobody wanted to play in it (!!!), and the tentatively scheduled game (Prune Bowl) between San Jose State and the Memphis Teachers also turned out to be just prune juice. It seems that San Jose, after playing twelve games without a defeat, played the University of Hawaii in the Islands, lost 13-12, and forgot to go home. They are now on the beach at Waikiki.

It may surprise many of our readers to know that the bowl business actually originated way back in 1901, when the Stanfords invited the Michigans to play an intersectional game. After Michigan won, 49-0, the Stanfords decided that maybe it wasn't such a hot idea after all, and dropped the game. In 1916 the Pasadena Chamber of Commerce stuck its finger into the pie and turned the game into an annual affair. The business men supplied all the roses and nearby Hollywood the rest of the embellishments. This service included a beautiful mascot with carefully penciled eyebrows for each team and a Cook's Tour of the movie kingdom for the players. The net proceeds were split three ways—one-third to each competing college and the final third to Pasadena for the upkeep of the Bowl.

From 1916-1935 Pasadena and the Rose Bowl game owned a monopoly

Here Below



THE MAN FROM MARS? The New Jersey coaches rushed for the woods when this knight in shining Gilman armor dropped through the roof of the football coaches meeting in Chicago. He refused to discuss the 5-man line.

on the bowl business. But it was too good a thing to escape the eyes of the sundry Chambers of Commerce forever. In 1935 the Orange and Sugar bowls opened their doors to the football tourist trade, and the Sun Bowl joined the parade the following year. And like Topsy the list grows and grows.

If the increasing number of bowl games have not hurt the Rose Bowl game at the gate they have succeeded in rubbing off some of its glittering gloss. For a while the 1939 Cotton Bowl game almost threatened to black out all the other New Year's attractions. The Bowl officials and a local radio executive had cooked up a scheme that had a real Barnum touch.

They intended to stage a double-

header between four outstanding elevens. Noted sports writers from all parts of the country would be brought to Dallas by airplane, winned, dined, and then asked to vote for the mythical national champion. It was a bitter blow to the local boosters of the rival cities of Dallas and Fort Worth (and also to the sports writers) when the dream went up in smoke. The fans had

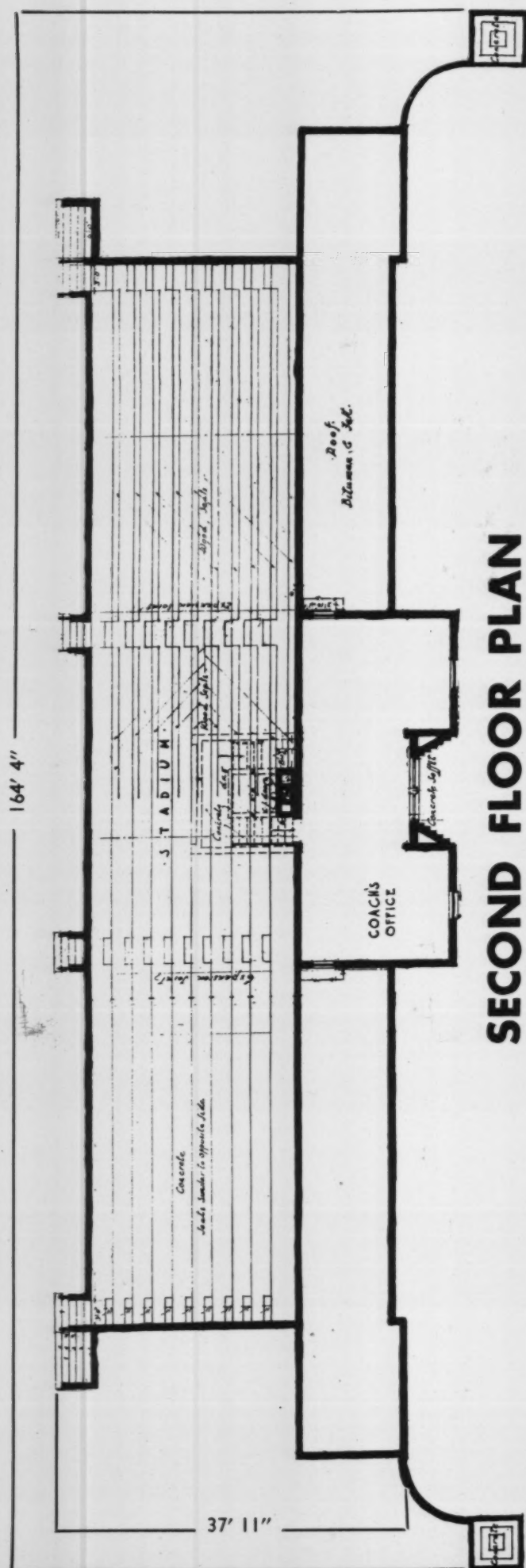
been promised that T.C.U. and Texas Tech would carry the Lone Star banner into the Cotton Bowl against the foreign invaders.

The radio executive had even promised to ask his father, a gentleman by the name of Franklin D. Roosevelt, to attend the double feature. But even the inducement of a president of the United States could not get T.C.U. to bite. Disappointed at failing to receive the Rose Bowl bid, T.C.U. turned down all other tenders to accept the Sugar Bowl offer.

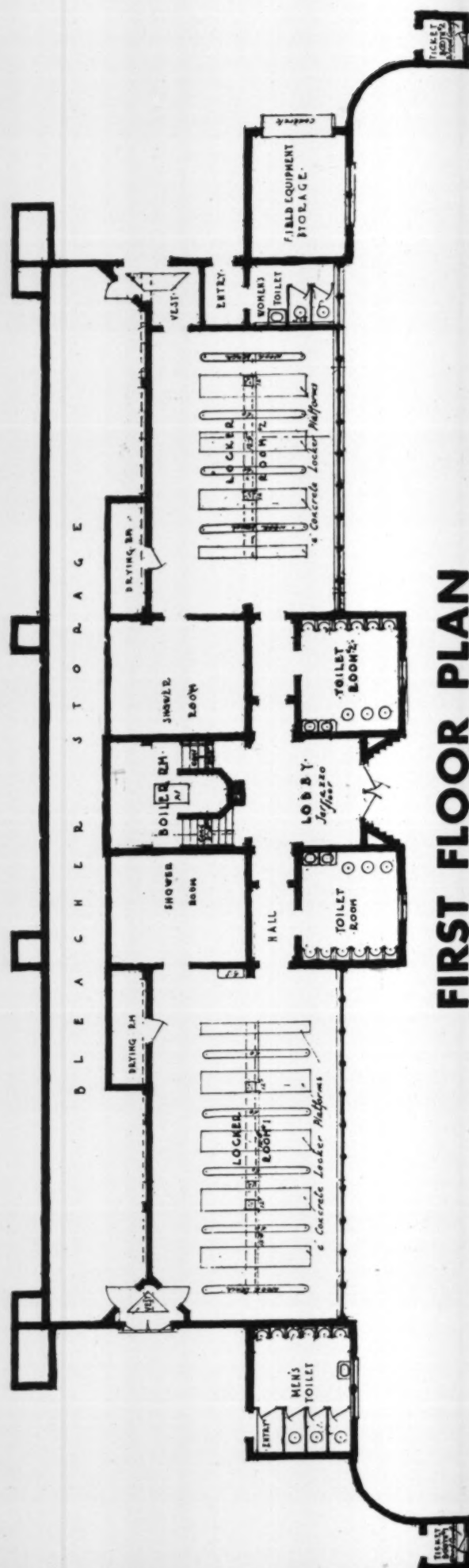
Some of our more informed experts recognized the fine Italian hand of Colonel Amon Carter behind the decision of T.C.U. to give the back of their necks to the bowl in their own backyard. The Colonel and Fort Worth are feuding with Dallas and would rather see T.C.U., the local pride and joy, pack 'em in for New Orleans' Chamber of Commerce than for Dallas'. Since it is bruited about that the average altitude of the T.C.U. student has gone up four inches since the Colonel started to take an interest in the football destinies of the school, it is barely possible that T.C.U. might listen to any suggestions the famous publisher might make on the subject of bowl games.

Amidst all the hurly-burly of the mad bowl epidemic, we are pleased to note that good old California Institute of Technology has kept a cool head. Tech has lost 20 straight games but is making no effort to raise a good football team just to play in the Rose Bowl. The team has been playing in it for the last six years. The Rose Bowl is its home field.

Where, oh where, are the snows of yesteryear? With so many new bowl games scheduled this year, we were disappointed to find that our favorite 1938 bowl game—the Eskimo Ice Bowl—was not played. We wonder if New Year's Day may have been night in the country where a full night's rest may mean for six months.



SECOND FLOOR PLAN



FIRST FLOOR PLAN



View of the Westfield field house and stadium from the street side. Each wing is identical in size and shape and each contains a locker room.

A COMBINATION FIELD HOUSE AND STADIUM

IN WESTFIELD (N. J.) they like to speak of their new combination field house and stadium as the building that cost nothing. When we interrogated the architects, Coffin and Coffin of New York, we were told that not counting the architects' fees, cost of ground, etc., the construction costs were, in round figures, \$32,000. That was in 1936. With the present slightly higher labor and material costs the building could be reproduced today for around \$35,000.

We wondered how anyone could get such a building for nothing, having back in our mind a projected summer camp. Was a local benefactor the good fairy, or did the ever generous gods in Washington shower down the necessary funds. No, was the answer to the question about the local benefactor and while it was true that the school authorities had obtained a grant of money from Washington that was not the reason for calling the field house "the building that cost nothing."

The "gift" was the result of the following series of events. Before the Westfield High teams moved to their new quarters they had used two rooms in a nearby grade school for locker and dressing room purposes. These rooms were not makeshift quarters or hastily reconstructed classrooms. The grade school, conveniently located on one side of the athletic field, was of recent construction and the two rooms used by the high school teams had been built specifically for that purpose. So while there may have been room for

improvement, there was no crying need for new quarters.

In 1935 the registration had increased so much that it was decided to make an addition to the building. After estimating the cost, it was found that it would be thousands of dollars cheaper to convert the two rooms being used by the athletic teams into classrooms, and to build separate quarters for the teams.

In planning the new field house, the architects, who had designed other school buildings for Westfield, worked hand in hand with Robert L. Duncan, football coach and director of athletics. They started from scratch, for their building was the first of its kind in the East. Besides housing the teams, the field house, by the nature of its construction, was designed to provide enlarged seating accommodations for spectators. Westfield was thus able to pro-

vide the needed classroom space for the lower grades and to build the athletic department's "dream child" for less money than it would have taken to build the addition to the grade school.

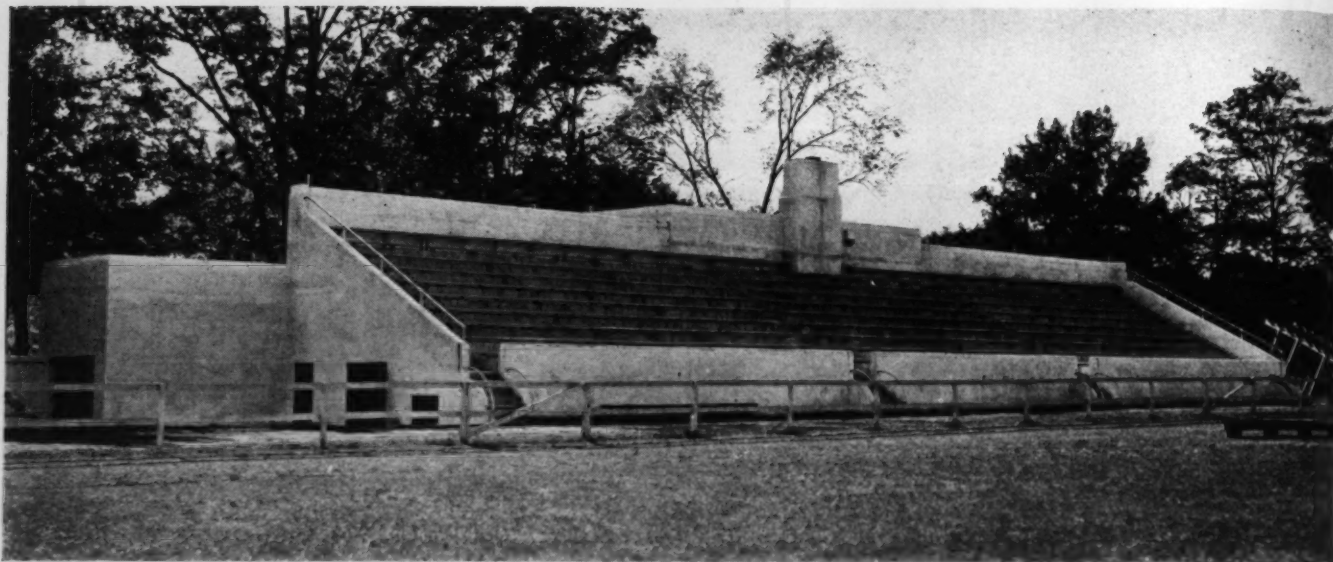
We asked the architect how it was possible to construct a building which provides complete facilities for 180 boys during the football season and also seats 1,000 spectators during a game, for less money than it would have cost to build a smaller sized addition to the present grade school building. He gave us the following reasons with his description of the structure.

While the field house could be of poured reinforced concrete the addition would have had to be of brick in order to conform with the architecture of the present building. The design of the field house could be functional and the shape of the structure be made to conform to the purposes it was to serve. The finished product proved, as do many of our modern office buildings, that a building built for a specific use can be pleasing to the eye as well.

A brief description of the construction follows. The cement was poured in plywood forms which gave a smooth surface to the exterior. All the rough spots were then rubbed down and the completed building painted with cement paint, leaving it gleaming white. An examination of the building will show that the inside walls are not plastered but finished with cement paint. No wood was used in the construction of the building; all windows and doors are

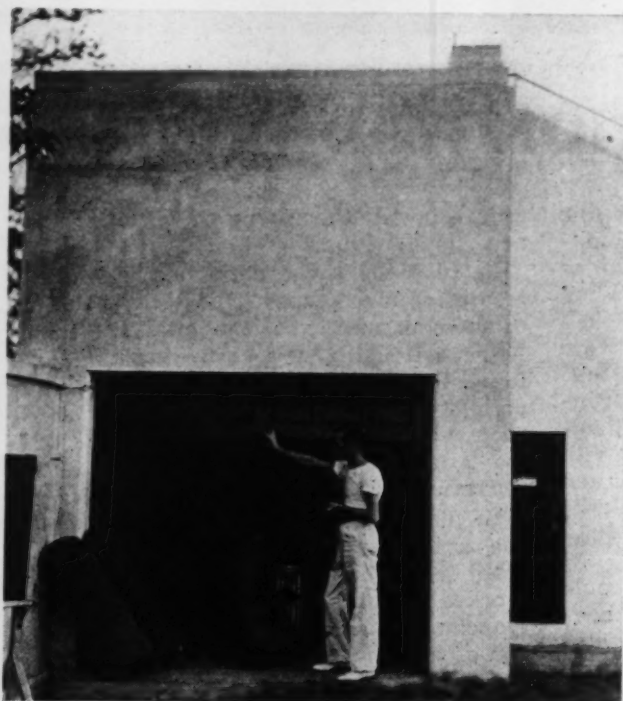


This lofty all-wood scoreboard was designed by the school building and grounds department and constructed in the maintenance shops.



Above is a view of the stadium section of the field house from the football field. The door at the far left of the picture leads into the storage room for football equipment. The second door from the left leads to spectator lavatories. The next door opens into a vestibule and then into a locker room. The last door is the entrance to the low section under the stadium where the lack of headroom prevents it from being part of the locker rooms. (During the off-seasons the portable bleachers and sections of the wooden running track are stored here.)

The center picture is a close-up of the equipment storage room. The blocking dummies repose here, and



also the track and field equipment. The wide overhead door is counter-balanced and is the same type of door that is used for private garages.

One end of the coach's and trainer's room is shown below. The lower window at the left of the desk opens on a locker room and makes it easy to check on how many boys are in and how many are ready to go out on the field. At the desk is Robert L. Duncan, football coach and director of athletics. According to the diagram on the blackboard he has been giving his boys a taste of the five-man line. At the right is a nice downy couch. Sometimes this coaching business looks pretty soft.



of steel and the floors made of cement.

There is no cellar under the structure. The oil burner which provides heat and hot water is in a pit. The burner is controlled by a thermostat which may be set, eliminating the loss of fuel that is consumed when the building is not being occupied.

The locker rooms are in the two wings of the building, each having a lavatory and a shower room adjacent to it. Separate toilet facilities are provided for the spectators. These are at opposite ends of the structure and easily accessible from the stadium seats. The shower rooms, of cement, have proven very satisfactory. The two vented drying rooms are each equipped with a blower fan to aid and provide easy drying without the excessive use of heat.

Attached to each wing of the building by a curved cement wall is a ticket booth. These booths, which are of the same construction as the building, do not show in the photographs but may be seen in the plans. When unusually large crowds are expected several knock-down wooden ticket booths are set up.



The locker rooms are light and airy with the windows extending the length of one side of the room and facing the west to let in the afternoon sun. The compartments are equipped with built-in locks.

A glance at the photograph on page 3 will reveal that part of the building is two stories in height. On the second floor of this section is the coaches' office and the training room. This room is 22 by 16 ft. and large enough to be used for lectures and chalk talks.

It can be seen from the plans that the locker rooms do not extend all the way under the stadium seats. The reason for this is that the slope of the seats does not allow sufficient headroom under the lower side. This

space is not wasted. Provisions were made to store portable bleachers in this section. During the winter the bleachers are stored here, and in the football season the outdoor wooden running track (which is used all winter) reposes in the same space.

In examining the building we noticed practically no signs of deterioration in the cement structure. To those who know how badly cement structures sometimes crack from expansion and contraction in a northern climate, this may not seem possible. The architects gave us the following explanation. The field house is really three separate structures—the two wings and the center section. Each section is separated by a three-quarter inch division. A flexible copper strip cast in the cement closes the opening and forms an expansion joint. This joint is also filled with plastic material which withstands expansion and contraction.

In conclusion we want to mention one thing that Westfield thoughtfully provides for all its loyal rooters and supporters. That is, wooden seats raised off the cold, cold cement.

This is the other end of the room shown on the opposite page. The small lower window opens on a locker room as does a similar window

shown in the other picture. Above the fire extinguisher at the right is part of a ventilating duct leading from the shower and drying rooms.



LIGHTING THE WAY TO GREATER ATTENDANCE

By James A. Culver

How Coach Culver and the director of La Salle Institute chased the wolf away from the school's athletic door

On Thanksgiving Day in 1936, about 1,500 spectators attended the traditional football game between La Salle Institute, Troy, N. Y., and its local high school rival. Two years later the same game, but under lights this time, attracted a crowd of 10,000. These statistics give an inkling of the tremendous increase in both student and community interest at Troy since the Institute installed its modern lighting plant. The program of night-time athletics gave the sports-loving public of Troy—a highly industrialized center—an opportunity to attend the Institute's games that was unavailable when the games were played during the day-time.

AT La Salle Institute, a military high school of 600 boys under the supervision of the Brothers of the Christian Schools, we believe firmly in the idea of a healthy mind in a healthy body. But, prior to the fall of 1937 we were seriously handicapped by a lack of proper interest, facilities, and funds for the extensive athletic program we desired.

Although the Institute is located in the enthusiastic, sports-loving city of Troy, it was impossible for us to stimulate in either our students or the community the interest necessary to properly establish our program of athletics. We had championship teams in the major sports of football, basketball and baseball, yet at the end of each season we still lacked the necessary funds to manage adequately or to keep our representative teams and activities properly equipped.

It was perfectly natural, therefore, that we should seek the root of the community apathy and plan a line of attack. Under the active direction of Rev. Brother Raymond, F.S.C., director of La Salle Institute, we made extensive investigations and came to the conclusion that if we were to play our sports at night, at which time more people could see them, we might find the solution to our problem. Immediate contact was made with the nearby General Electric Company, and under its careful supervision and engineering we soon had one of the most modern lighting plants in the country installed and functioning on our athletic field.

Night football shows profit

The first event under the lights was a social gathering with varied entertainment. The turnout of 15,000 to the event guaranteed complete success for our new venture. With the approach of the fall of 1937, and with the full cooperation of several of our football rivals who changed

the site of our scheduled games from their fields to our field, we launched our new venture with five home football games, each played on a Friday night. From the first game to the last of that season, the interest exceeded our fondest expectations; at the end of the season we found that we had played before some thirty-odd thousand people. This, of course, gave us a profit on our football, which used to net nothing but headaches before the advent of night games.

After the football season we did not undertake a winter program. In the spring and summer, bi-weekly boxing and wrestling bouts were offered to the public at night under the direction of the Junior Alumni Club of La Salle. This venture at-

had laid the groundwork for the future, and that we could now safely go ahead with our full program of athletic and social events.

As we entered the school year of 1938-1939, we had no qualms about equipping our interscholastic and intramural teams with the latest and best materials available. Our intramural program now became more extensive, and we successfully carried on a list of 21 activities in which more than three-quarters of the boys actively participated daily. These activities included football, basketball, baseball, track, cross-country, hockey, speed skating, swimming, mounted troop, riding team, tennis, golf, handball, boxing, wrestling, pistol team, rifle team, bowling, skiing, six-man football, and fencing.

The results, thus far, have fulfilled all our early expectations. Playing our 1938 football schedule of home games under the lights, we attracted larger and more enthusiastic crowds than ever before. As added attractions the cadet regiment gave exhibition drills before the game and the riding team put on a show during the half. Besides stimulating interest in the community, our new type of football program gave the sport a tremendous lift in the school as well. In 1936 we carried a squad of 30; we now are forced to carry on with 90 men.

Winter activities

After the football season we started preparing for a winter program, and have just completed a 1,000-foot toboggan slide and made preparations to flood our athletic field for ice skating. We are also planning to hold our hockey games and skating matches on Friday nights. For our spring sport we are contemplating night baseball. Because we will play these activities at night we feel that they will arouse sufficient interest to become self-sustaining.

From the viewpoint of an athletic director and coach, the writer is immensely pleased with the new set-up. Lighting increases the length of the school day, and enables us to carry on our varsity practice sessions and still have time for our freshmen and junior varsity teams to play interscholastic games after school is dismissed. In the past these contests were played on Saturday mornings. This used to handicap us in that a large number of students had Saturday employment.



Courtesy General Electric Co.

Toboggan Slide

This newly-erected chute is being used after school hours and at night under the lights. The lower end curves into the athletic field.

tracted about 12,000 spectators and again proved to us that night lighting was a definite asset to our athletic program.

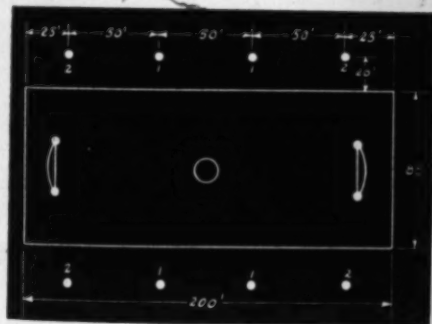
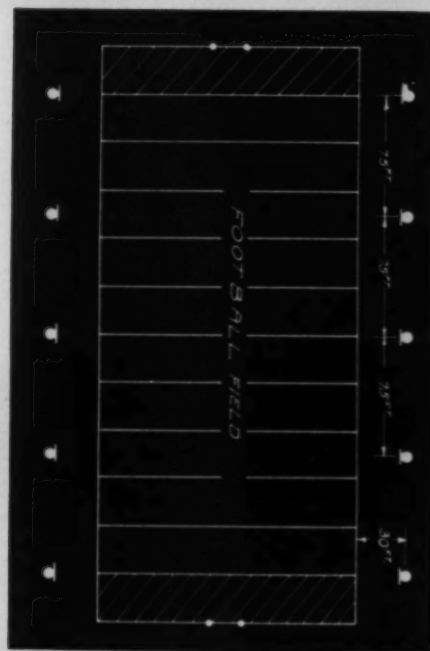
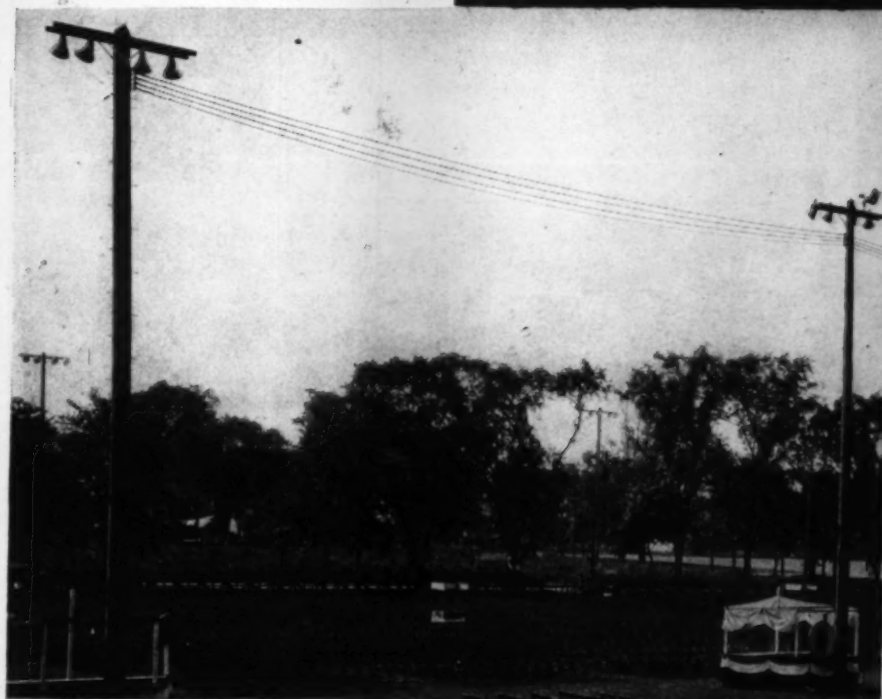
Our final event of the season under lights was held in May, at which time the school staged its annual spring drill. It certainly was a sight that will long be remembered by the 16,000 spectators who crowded into all corners of the field to witness the La Salle cadets drilling, their white uniforms resplendent under the lights.

Our initial experiment with night-time activities convinced us that at last we had found the means to arouse real interest in athletic and social activities on the part of our students and the townspeople. We felt that we

Football Layout

Spectators were few at La Salle Institute until the administration "saw the light." To stimulate new interest in athletics, the school installed a modern floodlighting plant and shifted its program of athletics to the night-time. The first nocturnal event was a social, and the crowd of 15,000 that turned out assured the success of the venture. The picture below shows how the seating for this event was arranged. Later the same field was used for football (right). A diagram of the layout is shown at the center right. There are five wooden poles on each side of the field, set 75 ft. apart and 30 ft. from the sidelines, with a mounting of four 1,500-watt floodlights to a pole 50 ft. above the ground. The entire layout supplies 60,000 watts of light, excluding several side-lights which are used for illuminating the area outside the field (for parking, etc.). The lights for the football field are now being used to illuminate the lower end of the toboggan slide which curves into the gridiron (see picture on opposite page).

All photos courtesy General Electric Co.



Ice Hockey

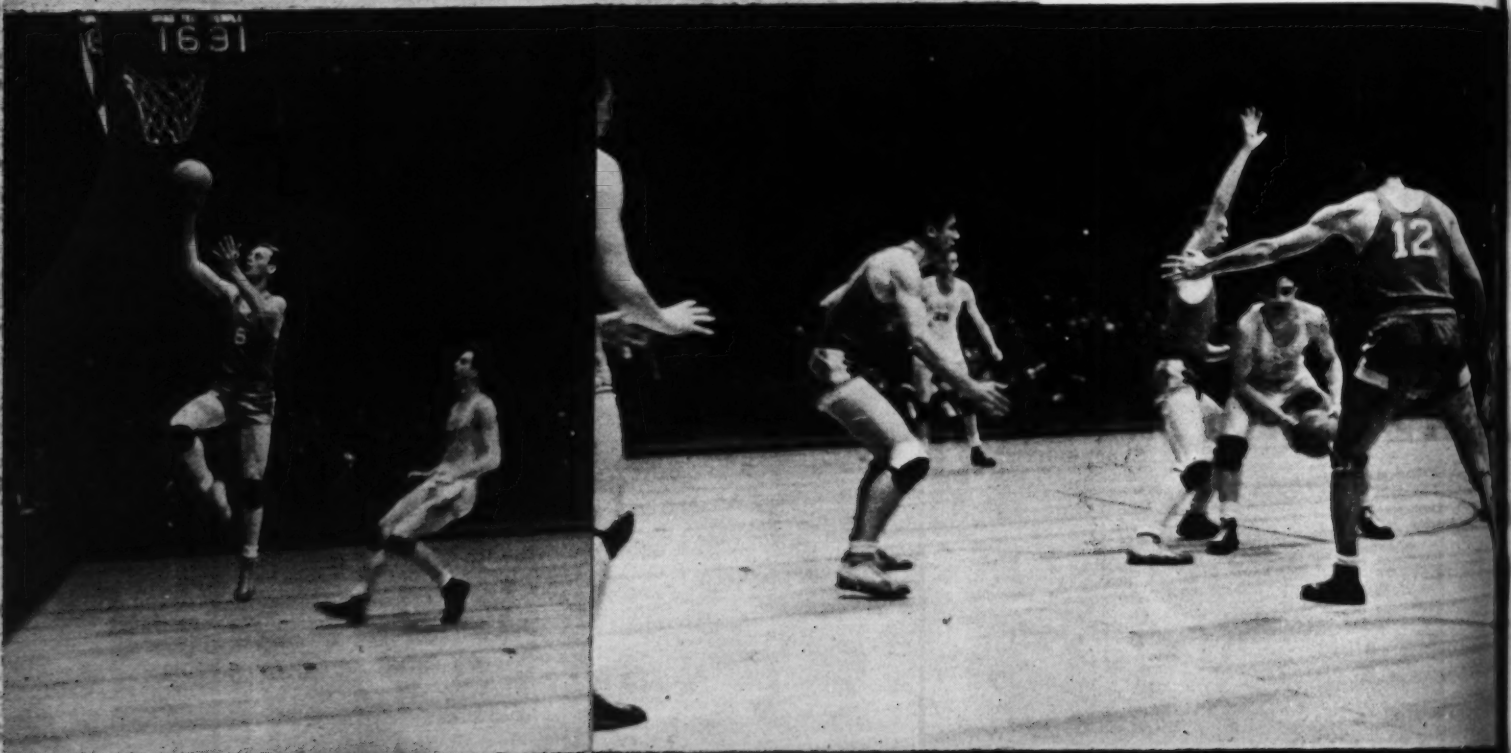
Outdoor ice hockey under lights requires a different installation than the football type. Since a rink is 100 ft. shorter than a gridiron, only four poles are required on each side. These poles are set 50 ft. apart and 20 ft. from the sidelines. In the diagram (above) the numeral in front of each pole indicates the number of floodlights per pole. The lights, which have a rating of 1,500 watts each, are mounted 25 ft. above the ground.



Inside Basketball

LEFT: Under ordinary circumstances a defensive player should never turn his back to the ball. There are occasions, however, when the player will have to forsake the more orthodox method of guarding in order to hang on to the man he is covering. The picture, a shot taken from last year's College of the City of New York-St. Joseph game, illustrates this point. The dark-shirted St. Joe's player in the foreground, after passing to a teammate, has just pulled a change of direction on his guard and is looking for a return pass. Fast and clever though the shift was, it did not fool the C. C. N. Y. player. Although he is forced to turn his back to the ball, he prevents the possibility of a return pass by throwing up his left arm and extending his right to the side.

BELOW: When Bradley Tech and Temple met in the semi-final round of the national invitational tournament at Madison Square Garden last March, the large crowd was entertained with some real scientific basketball. Temple sprang a zone defense on Tech and the latter countered with a fast break coupled with a deliberate attack when the fast break failed. When they were handling the ball deliberately, the Tech team



set up with three men out and their big center under the basket just outside the free-throw lane. The outside men then tried to work the ball in to the big man for an easy lay up. The Owls operated from a sprawling 2-1-2 zone which struck with devastating swiftness once possession was gained. The picture directly above shows one of the many easy baskets scored by Temple after one of their frequent interceptions.

The shot at the above right, taken during the same game, shows a Tech player attempting to squeeze a pass through three of the Temple giants who have formed a bulwark against any invasions down the center. At the right one of the Bradley men has sucked Mike Bloom of Temple out of position with a fake shot from the sideline. As Bloom left his feet (something he'd never have done had Temple been playing a man-to-man defense), the Tech player whipped a pass under him to his teammate beneath the basket. All season long Temple played one of the most reckless defensive games the conservative East has ever seen. They were able to do this and still pile up the most impressive record in big time basketball circles last season, because they had a group of players who combined exceptional height and power with speed, stamina, dextrous ball-handling ability and cleverness. Temple annexed the Eastern Conference title last year and then went on to win this tourney.



SOUND EQUIPMENT FOR THE HIGH SCHOOL

By O. V. Swisher

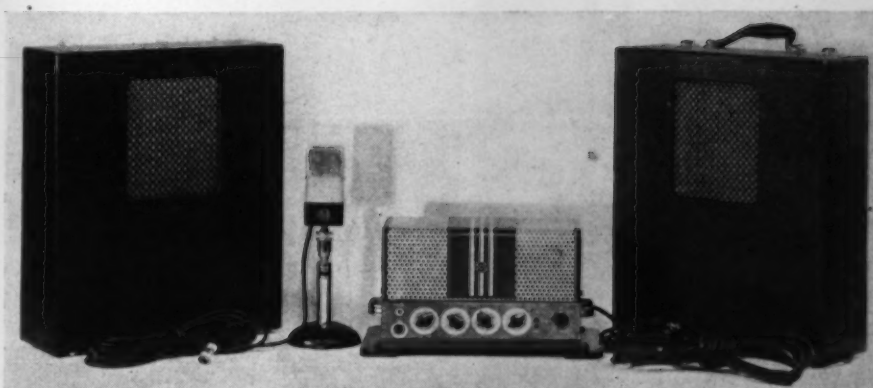
A reliable manufacturer will assume the responsibility for proper installation and satisfactory performance

SOUND amplifying equipment makes every seat a ringside seat. As long as the spectator can see reasonably well, he will have no trouble following the game with "Mr. Mike" on the job. The voice with the iron lungs brings him the necessary details no matter where he is sitting. This service includes important announcements, a running description of plays, incidental music between periods, substitutions, etc. And once you get used to "Mr. Mike" his services become indispensable to the full enjoyment of the game.

There is a wide variety of sound equipment available which a school may purchase, ranging from reasonably priced equipment, well designed, to poorly designed equipment at a lower price. In the long run, however, inferior equipment will cost more for upkeep and may not perform as satisfactorily. Today, there is a great quantity of both good and bad equipment in use. Unfortunately, a large portion of the good equipment sounds no better than the poor simply because the improper equipment was selected for the particular use or perhaps because the equipment was not installed properly. Occasionally, equipment which has been selected and installed satisfactorily is not operated properly.

One type of equipment is best suited for voice amplification, another type is best suited for music amplification, while still a third type of equipment provides adjustments for either voice or music amplification. Furthermore, various sizes of equipment are available; from equipment for a small group of persons to equipment capable of covering a square mile in area and being heard by two to three hundred thousand persons.

It is well to remember that microphones, amplifiers and auxiliary units are available in a wide variety, each designed for a particular type of service. There are close speaking microphones, pick-up microphones, non-directional and uni-directional microphones, carbon and crystal microphones, ribbon and dynamic microphones. With these microphones you may use glass tube and metal tube amplifiers, high impedance and low impedance amplifiers, amplifiers with inverse feed back and just plain amplifiers. For reproduction, there are directional and



Courtesy R.C.A. Mfg. Co.
The top illustration shows a 25-watt portable sound unit with a built-in record player, microphone and speakers. The set below is a 12-watt outfit with two enclosed portable speakers.

non-directional loudspeakers, metal or wood loudspeakers, metal, paper or resinous diaphragm loudspeakers. The many types and terms may seem confusing to the inexperienced, but as the doctor diagnoses and prescribes for the patient, the experienced sound engineer surveys a gymnasium or athletic field, then recommends equipment which is best suited for that situation.

A school contemplating the purchase of sound amplifying equipment should first consider the manufacturer of the particular equipment desired. The manufacturer's experience in building equipment and the number of successful installations of that equipment in use should be considered carefully. Next, it should be ascertained whether the manufacturer maintains a national field organization of experienced sound engineers and an ample stock of replacement parts at each of several convenient points.

Although readily available field engineers and replacement parts depots are quite important, an experienced engineer should personally supervise the installation of the equipment and give instructions as to its care and operation. An engineer should be available to check or repair the equipment in case of trouble. These services place most of the responsibility for proper selection of equipment and satisfactory performance upon the manufacturer. They tend to prevent the school from spending good money for equipment which does not function as expected and for which adjustment service is not available. The reliable manufacturer and his representatives will willingly assume this responsibility and relieve the school of all worry.

The experienced sound engineer is qualified to recommend and install reasonably priced equipment. He may recommend permanent equip-

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Model Gymnasium at New Senior High School

This beautifully proportioned plant in Appleton, Wis., is an isolated unit, ideally arranged with two practice basketball courts laid out across the width of the floor and the exhibition court running longitudinally with the gymnasium. The backstops for the cross-courts are of the swing-up-forward type and are installed along the side of the gym. The floor may be divided into two sections by swinging up the side backstops and rolling the folding doors (seen in the corners at the top) to the center of the floor and then spreading them across the floor to serve as a partition. These doors are hung on tracks that extend from the end of the gym to the center and across. The gym seats are of the telescopic recessed type with nine movable rows capable of accommodating 1,000 spectators. Note the excellent ventilating system, the overhead loud speaker and the expert planning that made it possible for this big gymnasium to have natural lighting from three sides.

Photos courtesy Fred Medart Mfg. Co.

Smith & Brandt, Architects

GYMNASIUM LOCKERS AND LOCKER SYSTEMS

By E. V. Westmeyer*

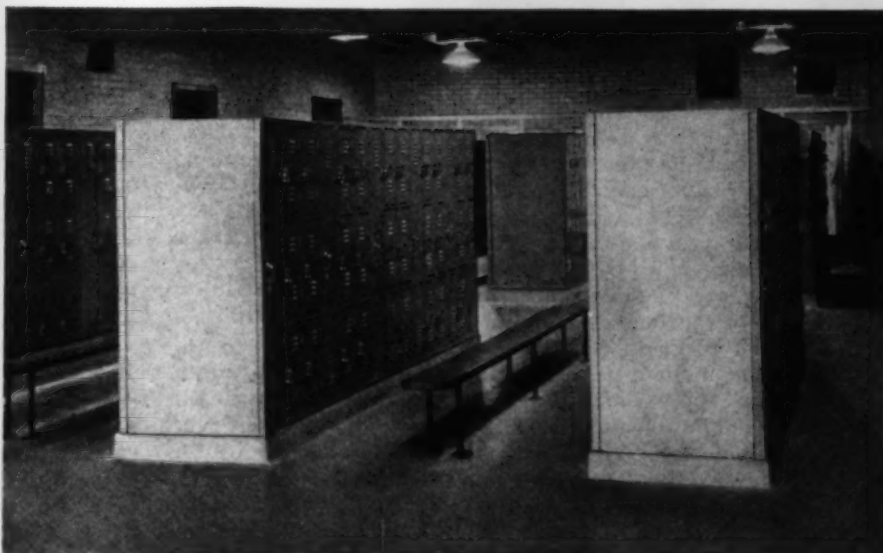
The four types of gymnasium lockers available for physical education purposes and their specific uses

IN SELECTING the proper locker for physical education requirements, we must first take into consideration three things: (a) the amount of floor area available; (b) the number of persons to be accommodated (with some room for further expansion); and (c) the amount of money appropriated.

Below we have outlined the four general types of gymnasium lockers available, and their particular and individual uses. In the larger schools, any or all may be installed and used to good advantage.

Single-Tier Lockers

In the large, separate gymnasium, where students may come in from the outside and require storage space for heavy outer garments, the full-length locker, probably 12" x 12" x 60" or 12" x 12" x 72", will serve to the best advantage. Even though full-length lockers are not furnished to the entire student body, it is very



BERGER MFG. DIVISION
GYMNASIUM LOCKERS: The combination of a full-length single-tier locker and 20-in. high triple-tier lockers provides efficient storage without requiring the services of an attendant.

desirable that a separate locker-room, with at least 12" x 12" x 72" full-length lockers, be maintained for the use of visiting athletic teams.

As an alternative, the two-person locker may be used. It gives full-length clothes storage, yet occupies considerably less floor area than the ordinary single-tier, single-person locker. This type locker is built with two compartments, each having separate doors side by side. These coat compartments are 7½" wide x 54" high and above the two coat compartments are two separate hat compartments, the locking of which is controlled from the inside of the coat compartment. The over-all height of this type of locker usually runs 72". A 15" width x 15" or 18" depth is recommended. The 18" depth will accommodate a coat hanger.

Double-Tier Lockers

Where floor space is somewhat restricted, yet a good-sized locker is desired for each individual, the double-tier locker may be just the thing. The double-tier locker is more acceptable in the warmer climates where storage of full-length garments, such as overcoats and topcoats, is not required. In the northern climates, outer wraps must be doubled up in order to get them into the locker. The double-tier locker does not have a hat shelf where books and other miscellaneous belongings may be stored.

Double-tier lockers are usually installed in the following sizes: in junior high schools—12" wide, 12"

deep, 30" high; in senior high schools, colleges, and universities—12" wide, 12" deep, 36" high.

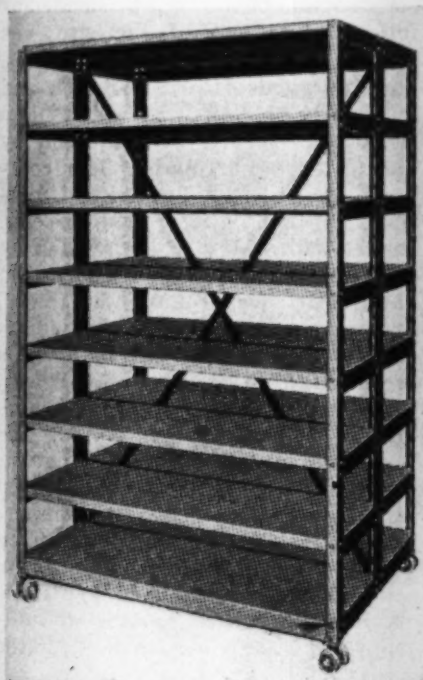
Gymnasium Type Lockers

The gymnasium type locker and its use is not as well known or understood as some of the other types, but for all-around service we believe it will give the most satisfaction, both to the students and to the school or gymnasium officials.

Briefly, the gymnasium locker is merely a combination of a full-length single-tier locker and 20" high triple-tier lockers. This combination actually provides an efficient clothes storage system, but does not require an attendant's service or an instructor's supervision.

The gymnasium type locker serves to special advantage where floor space is restricted because it accommodates one person to every four and one-half lineal inches of floor area, as compared with the six-inch lineal requirement for the double-tier locker and a minimum of 12" for the single-tier locker. It also leaves one full-length locker to accommodate street wearing apparel while the class members may be in the gymnasium. In addition, the full-length locker is empty and available for use for outside basketball teams, etc., who may use the gymnasium at night. Another important advantage over the use of smaller lockers is the fact that sweaty gym clothes may be hung full length and thoroughly aired and dried.

(Concluded on page 39)



Fred Medart Mfg. Co.

Wire Basket Truck

Portable steel trucks expedite the handling of wire baskets and can be used in place of the gymnasium type lockers with a saving of space. They are made up of two standard steel shelving sections, bolted back to back and cross-braced for rigidity. Although the open construction of the shelving provides the maximum ventilation for the baskets, to insure a thorough airing and drying the truck may be wheeled into a drying room.

*This article appeared originally in the *Journal of Health and Physical Education* and is reprinted with permission of the publishers.

OIL-SURFACED ALL-WEATHER TENNIS COURTS

By N. W. Tate

The construction of a low-priced court that is fast, resilient, glare-proof and improves with time and use

N. W. Tate, city superintendent of the Gooding, Ida., Public Schools, describes the construction and maintenance of the local oil-surfaced tennis courts.

SINCE growth in tennis usually evolves from an increase in tennis court construction, it isn't surprising to find, what with the huge increase in public tennis courts during the past few years, that the popularity of the game is growing steadily if not spectacularly.

The recent boom in construction, however, does not mean that tennis is now "out of the woods." There are still many communities where few or no public courts are available. And since the cost of building and maintaining adequate courts is usually beyond reach of the high school budget, the problem of supplying tennis-minded boys and girls with a place to play is a perplexing one.

At Gooding the problem was solved by the combined efforts of the high school student association, the city and the school district. The three agencies combined to share the cost of four relatively low-priced, specially constructed oil-surfaced tennis courts. Before describing the construction of these courts, let us briefly review the two types of courts—concrete and clay—that are now in general use.

The concrete court has no superior as far as economy of upkeep is concerned. Once laid, if the construction is good, it is there forever, requiring little further attention. Its lack of both resilience and thoroughly satisfactory rebounds is of no concern to the youthful enthusiast. The danger of nasty spills due to dust or grit on the court may be avoided by frequent sweeping.

The only objection to the concrete court for the public school is its cost. Though figures vary in different localities, it is safe to place the minimum cost, if the surface is carried well beyond the baseline, at \$1000. At even that minimum price few schools can afford enough courts to meet the demand once tennis is started. And if there is anything worse than having no courts, it is having too few.

The initial cost of clay courts is reasonable. If the material is available they may be constructed for as little as \$100 each. It is a recognized fact that a well-kept clay court is hard to beat. But that is the joker. What with the hard use and inade-

quate custodian service characteristic of the public school playground, the well-kept clay court simply does not exist. Such courts, besides being unplayable during rainy weather (and usually there is plenty of rain during the school playing season) pulverize during hot, dry weather and blow away. In the long run they are a great deal more expensive than concrete courts and much less satisfactory.

The answer to the tennis court problem in the public school is the oil-surface court. But not without some notable reservations. Probably enough asphalt oil has been applied on court sites to surface a highway across several states — applied, plowed under, and forgotten. No type of construction demands more persistence and patience. Each oil construction job develops, on the tennis court as well as on the highway, some temperamental quirks of its own. Variations in temperature, in compaction, in the oil itself, and in the surfacing rock make the exact outcome frequently problematic.

Types of courts

There are two general types of oil construction courts: the oil-mix and the oil-surface or "top-shot." The oil-mix type has not been as satisfactory as the other because of the difficulty of compaction and the cost of upkeep. It is, in brief, constructed from crushed rock and asphalt base road oil mixed before application and spread to a depth of two or three inches on a packed and fairly smooth base. On the highway where this kind of construction has been used extensively with good results much of the compaction has been left to the traffic; on the court where it is impossible to even approximate highway conditions heavy rollers must be used for the compaction. The tendency of the mix to pile up ahead of the roller, and the tendency of the roller to loosen the mix when it is turned, has made this a difficult job at best. On this type of court the crust formed by oxidation of oil and partial compaction has generally been incapable of withstanding either the play or the weather. Although the oil-mix court is relatively easy to lay, it had better be left alone unless good compaction is assured.

The remainder of this article will deal with the construction of the oil-

surface court. It will describe in detail the actual laying of the courts on the Gooding High School playground. Schools which undertake to construct such courts may shorten the work and insure success if they can obtain the use of the oil distributors, spreader trucks, and rollers that are employed in the construction of oil-surface highways. Here in Gooding, with cheap labor available, most of the work was done by hand, team and truck.

Construction of base

In the construction of oil-surface courts the base is of primary importance. Since the surface coating follows the contours of the base, the base must be smooth. It must also have enough rigidity to support a roller—or a truck and roller if the roller is not self-powered—without indentation.

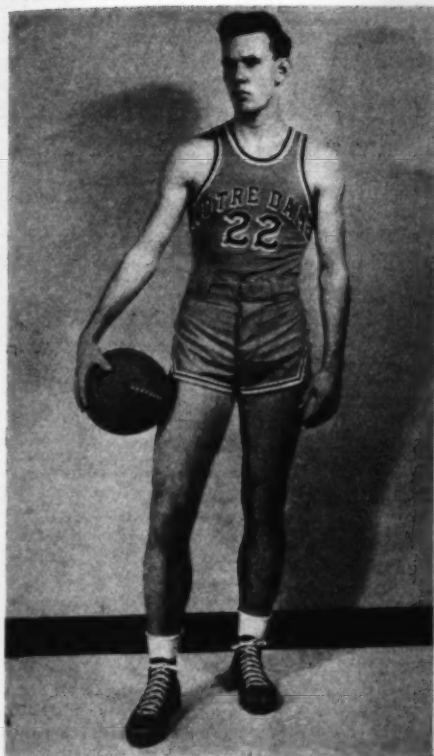
On the Gooding playground the construction of the base proceeded as follows. The soil of the site was plowed to a depth of three inches, and 150 yards of crushed rock and 150 yards of clay were spread and thoroughly mixed with the soil by spring-tooth harrowing. The composition was then leveled with a combination farm float and leveler, soaked with water, reharrowed while moist, and then rolled with a five-ton roller. It was again harrowed, crowned to center, and finally water-leveled (low spots shown by puddles were built up to grade by hand). The surface was then lightly harrowed, moistened and rolled. The hard and smooth base resulting was primed with cheap road oil sprayed on by a hand distributor¹ at a temperature of 190-200 degrees F and to an amount of approximately one-fifth gallon to the square yard. When the oil had penetrated and dried sufficiently, the base was rolled for the final time.

Schools which have a site already leveled and compacted—perhaps clay courts already in use—can dispense with much of the leveling and rolling. The surface of any base, however, must be practically free from dust and loose particles before the prime coat is applied. If dust in

(Continued on page 38)

¹A one barrel capacity tank mounted like a push cart on two wheels and having a gasoline flame heater below the tank. Distributor is equipped with a rotary pump and spray attachment and is generally used in making small repairs on oiled highways.

Basketball Styles For 1939



Suit by O'Shea

Shoes by Converse

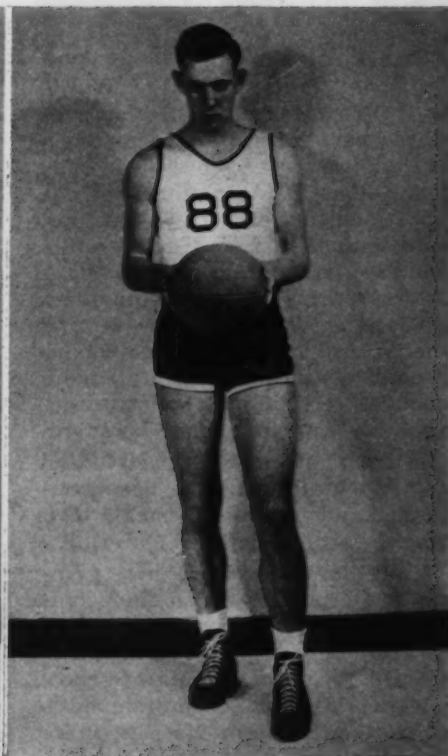
A lightweight outfit of top quality. Trunks of imported French flannel, cut high with attached belt. Supporter-type shirt of French spun worsted. The letters are of California felt.



Suit by O'Shea

Shoes Ball Band

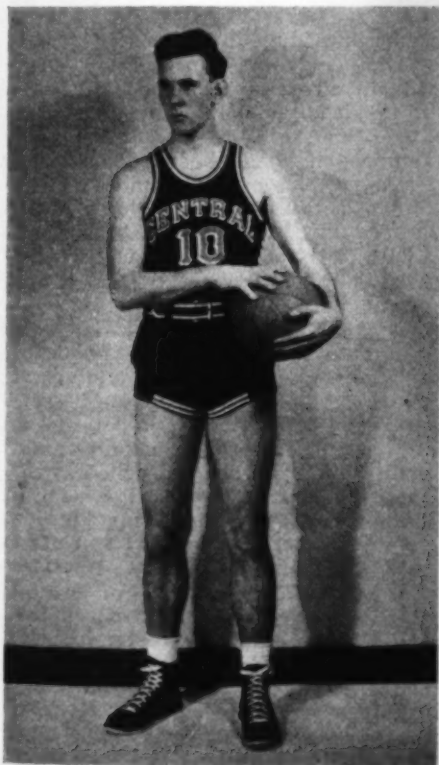
A lower-priced outfit. Trunks of medium grade rayon and cotton satin with contrasting striping. Jersey is glossy finished rayon with cotton backing. The plain block numerals are satin.



Suit by Southern

Shoes by Hood

White, heavyweight rayon jersey, cut extra long and with form-fitting sides. Although the shoes are of top quality, the complete outfit falls in medium-priced range. Simple but snappy suit.



Suit by O'Shea

Shoes by Riddell

A very durable outfit with whipcord trunks with a T insert of French worsted at the sides. Heavy rayon jersey with worsted backing. The shoes are of leather with a white sole that prevents the marking up of the basketball floor.



Suit by Southern

Shoes by U. S. Rubber

A colorful orange outfit with contrasting black trim. Jersey of high gloss rayon with cotton backing and trunks of Skinner's waterproof satin. Top quality shoes cut high in the back. A well-finished and moderately-priced outfit.



Suit by O'Shea

Shoes by Riddell

Vermilion Skinner satin jacket with worsted back. Cuffs and jacket bottom of special elastic knit ribbing. Slacks also satin with two-color silk braid. The shoes are of white leather and have a white rubber sole. A real classy outfit.

ATHLETIC-PLANT CONSTRUCTION BY THE WPA

By A. W. von Struve

Many of the new buildings built with federal funds have combined gymnasium and auditorium facilities

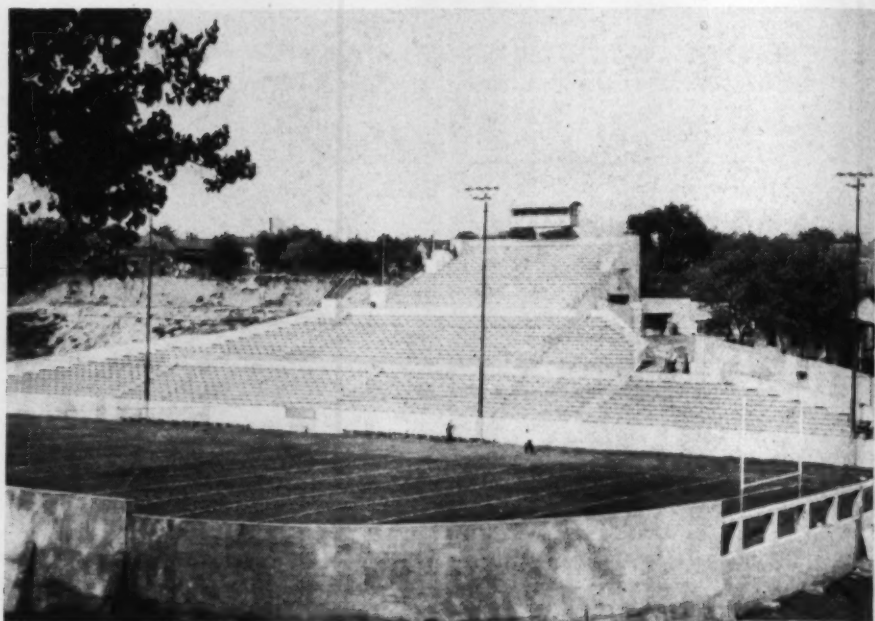
ONE of the most important contributions of the Works Progress Administration during the past several years has been the addition of scores of new gymnasiums to the nation's recreational facilities. These gymnasiums, along with WPA-constructed auditoriums, community halls, park buildings, armories containing quarters designed for community use, and other similar structures, have brought to hundreds of centers more adequate recreational opportunities for both young and old.

In many instances, attractive and adequate buildings have been constructed at relatively small cost through the use of native materials.

While the majority of these gymnasiums, especially in smaller communities, have been built in connection with schools, in order to meet the athletic requirements of school children, they have been designed to provide auditorium facilities for adult programs as well. As a result, many communities which heretofore had neither a gymnasium nor an auditorium now have both. The children in those communities are now able to enjoy the benefits of intramural sports and planned athletics, while at the same time the adults now have a place in which to hold community meetings and programs of an educational and cultural nature.

A typical example of this type of combined gymnasium and auditorium is found at Melrose, N. M. Costing approximately \$35,000, the building provides floor space for two simultaneous basketball games as well as a completely equipped stage.

Architecturally, the Melrose building fits in well with its surroundings. It is a low one-story structure with walls of adobe brick set in cement on a concrete foundation. The adobe bricks are made of caliche, sand and stable manure mixed to formula. This



The valley in Central Park, Peru, Ill., formed a natural amphitheater for the \$300,000 stadium and field house that was constructed for the La Salle-Peru Township High School.

type of construction is strong, attractive and extremely durable.

The building has a seating capacity of 1200 persons. Inside dimensions of the main room are 81 by 96 feet, with a height of 20½ feet to the roof trusses. The crown of the roof is 10 feet higher, making the overall height of the building 30 feet.

White maple was used for the floor of the playing court. A sub-floor was first laid of ordinary pine nailed to two-inch screeds set in concrete. There is no danger of dampness, because an inch of asphalt was spread over the concrete. Other floors are of oak and concrete. The dimensions of the main playing court are 51 by 90 feet.

The stage is large enough to accommodate most professional productions; it measures 20 feet deep, 50 feet wide and 16 feet high. The proscenium is 40 by 20 by 15 feet high. A divided red velvet-velour front-curtain on a noiseless track can be drawn from one side,

and there is also a neutral-grey cloth cyclorama installed on hardwood noiseless tracks. The stage lighting is complete and up to date. Dressing rooms adjoin the stage on each side.

Besides the stage dressing rooms there are several others and showers to accommodate 20 persons at a time.

Another gymnasium, at Fossil, Ore., was the direct cause of the admittance of the local school to the accredited list of schools in that state. Fossil's old gymnasium had been condemned, leaving the community without recreational facilities. A new building, 56 by 90 feet, with two basement rooms and a 20 by 40-foot stage, was constructed with the help of WPA at a cost of approximately \$10,000.

In 1937 a new gymnasium and community center was completed at Two Buttes, Colo. This building, of native stone, is equipped for basketball and other indoor sports as well as for stage productions. The balcony and main floor have been designed to accommodate large crowds. The stage is complete with modern stage equipment, and there is a large room behind the stage where community gatherings may be held.

The basement, 50 by 60 feet, contains a coal room, furnace room, kitchen, and dining room with an attractive fireplace. The fireplace is unusual, having in it several pieces of wood from the petrified forest nearby. The total cost of this building, including both federal and sponsor's funds, was in the neighborhood of \$30,000.

La Salle-Peru Township High School, Ill., has a new \$300,000 stadium that was a WPA project, the high school district furnishing about 15 percent



Both Hillsborough and Plant senior high schools in Tampa, Fla., have one of these gymnasiums. They cost approximately \$25,000 each and are capable of seating 1000 spectators.

of the cost in skilled labor and materials for construction. This stadium is located in a valley in Central Park in Peru, adjacent to the high school site. This valley forms a natural amphitheater for the stadium and gridiron. The remainder of the park was turned over to the city at the same time the high school took possession of its part. This park was developed by a local clock manufacturing company, which gave the property, valued at \$62,000, to the La Salle-Peru Township High School and the city of Peru.

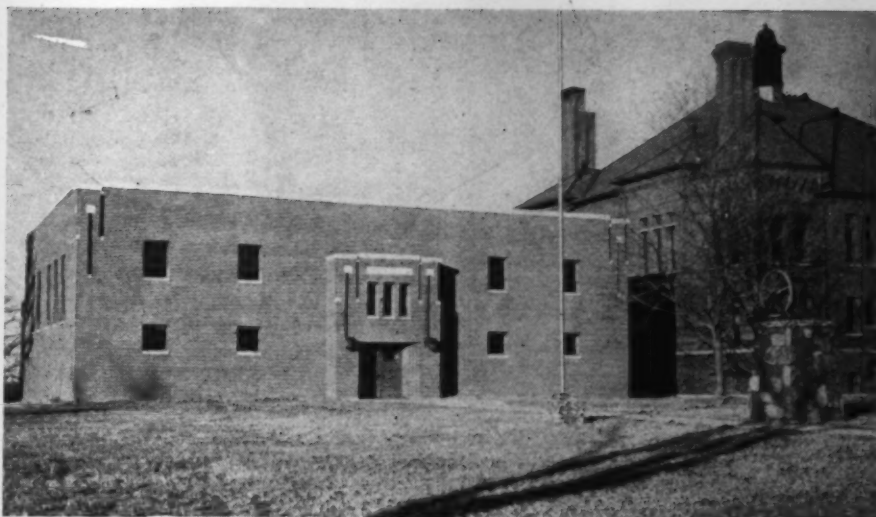
At Matthiessen Field, located between the high school building and the stadium, are two football practice fields and a quarter-mile running track with a 420-foot straightaway.

The gridiron is surrounded by a high concrete wall on three sides and the stadium on the east side, which cuts off the view of the playing field of those outside. The seating capacity of the stadium is 3,800.

The lighting of the gridiron is accomplished by eight 60-foot poles carrying forty-eight 1,500-watt lights. Four steel poles are located in front of the stadium and four wooden poles on the west side of the gridiron.

The field house, 106.5 by 29.6 feet, is located on the south of the gridiron and includes two spacious team rooms with showers and a large storage room, one for the home team and the other for the visiting team. Above the field house on the street level is the main ticket office. A secondary ticket office is located on the south side of the stadium on another street level. A press box with a capacity for twelve news writers, located on top of the stadium, gives complete vision of the entire playing field. The press box is of aluminum construction supported by two piers of concrete. The field house, ticket offices, press box, toilets and concession room are all heated electrically.

As part of a \$100,000 program for the schools of Tampa, Fla., two gymnasiums costing approximately \$25,000 each were constructed at Hillsborough and Plant senior high schools. They are



Much of the material that was used in the construction of this sturdy-looking gymnasium at Panora, Iowa, came from a demolished school building. The gym was erected for \$20,000.

capable of seating 1000 persons each.

These two new Florida gyms are expected to increase the popularity of basketball in their school districts. More important, they will make possible the expansion of intramural sports, so that all the boys and girls in each school, rather than the mere handful who make a team, may benefit.

Another low-cost gymnasium was completed in Carrollton, Ga. The walls are of native granite and all the interior woodwork is of timber grown in the county. A swimming pool is included. This building, like so many of the others, is designed for use as a community center as well as a gymnasium.

At Talcott, in Sumners County, W. Va. a combined gym and auditorium has just been completed at a cost of \$16,770. Sponsored by the county board of education, this steel-and-brick building is modern in every respect, with a seating capacity of 800. It is centrally located and is available as a meeting-place for the town council and various civic clubs and lodges, as well as for general community and school activities. The gymnasium, with

basketball courts and other facilities, fills a long-felt need.

Jackson, Ohio, also has a new memorial building and gymnasium built by the WPA. The front part of the building houses city offices, a library, an American Legion room and Boy Scout clubrooms. The gymnasium proper is 82 by 132 feet, two stories in height and so constructed as to serve as both a gym and assembly room. The building also contains a commodious stage, dressing-rooms and showers.

An even larger gymnasium has been built at New Concord, Ohio, for the joint use of citizens and students of Muskingum College. The plant includes the latest in equipment and a fine swimming pool finished in attractive mosaic tile.

The stadium that was completed at Rutgers College last fall is about the largest built by the WPA. It is capable of holding about 25,000 spectators and cost more than a half million dollars to build, including the development of extensive athletic fields.

The entire athletic plant is spread over 152 acres of ground. Thirty acres have been developed for football, baseball, lacrosse and other sports and twenty acres have been developed as a parking area.

The seating capacity of the stadium at Louisiana State University at Baton Rouge has been practically doubled by means of a WPA project. Approximately 26,000 seats were added to the stadium, bringing its capacity up to about 50,000. The space beneath the stadium has been utilized to provide dormitory quarters for 1,200 students. Offices for the athletic officials and locker rooms, training rooms and similar facilities for athletes have also been constructed.

These are only a few examples of this type of construction. The WPA program has not been confined to any one section, nor to any particular type or size of community. Under the WPA program several buildings have been erected which serve the purposes of gymnasiums although they are not classed as such.



The Stratton School building in Kit Carson County, Colo., is constructed entirely of reinforced concrete, and consists of a large, centrally-located gymnasium with four adjoining classrooms.

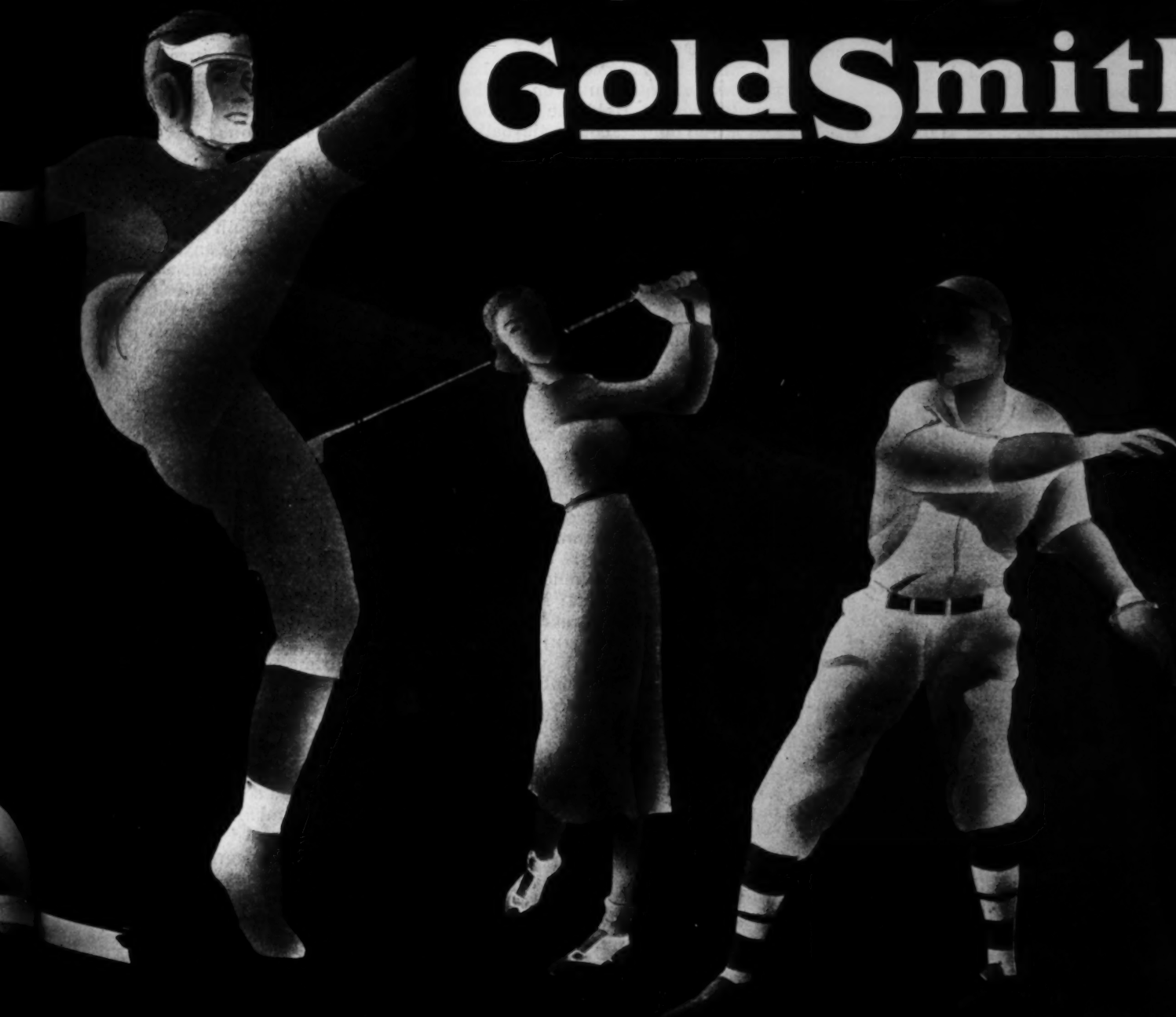


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Girls' Officiating Procedure

By **Wilhelmine Meissner**

This is the second of two articles on the technique of the woman basketball official by Miss Wilhelmine Meissner, editor of the *Official Basketball Guide for Women and Girls* and a member of the New York Board of Officials. The article appeared originally in the *Guide* and is reprinted through the courtesy of the publishers—A. S. Barnes and Co. (N. Y.)

AFTER cleaning up the host of preliminary details, the officials are ready to work the game. The first consideration is the position on the court to assume as the base of operations. If the referee is working with someone else, she (referee) stands on the side of the floor facing the scorers and timekeepers, and remains on that side whenever possible. This cannot be done if she is calling them herself. But with two officials on the job, it is usually possible for the umpire to cover all out-of-bounds plays, violations, etc., which the referee cannot possibly see from her side of the court.

The umpire moves up and down the court near the sidelines, facing the referee, on the side nearest the scorers and timekeepers.

The referee, moving freely up and down the court near the sidelines, keeps track of the ball and of the players near the ball. As far as possible she must avoid getting in a position where a player's body hides the ball from her; she must place herself so that she can look between opposing players and observe any personal contact. The umpire watches play in the back court (e.g., line violations) and the section of the floor to which the ball is going (the fore court). It is in this section that blocking and tagging often occur, out of the line of vision of the referee, who is watching the ball.

Out of bounds, time-out, etc.

On out-of-bounds plays, the ball is awarded to an opponent of the team which last touched it. Although ordinarily the whistle is not blown, the official should name the team entitled to the ball. The ball is put in play quickly from the sidelines opposite the spot where the ball left the court. If the wrong team gets possession of the ball out of bounds, the referee or umpire blows her whistle and awards the ball to the team entitled to it. The player taking the ball may stand any distance back of the sideline. If she steps over the

line before releasing the ball, the other team receives the ball out of bounds.

Whenever time-out is called the umpire checks with the timers to be sure there is more than one minute left to play in that quarter. If there is less than a minute left to play in a quarter, the time-out is not charged to either team and the referee announces the end of the quarter. In other cases, after expiration of time-out, the ball is put in play where it would have been had time-out not been called.

If a substitute is coming in, the umpire should notify the player who is to leave the game and signal for resumption of play when the outgoing player has left the floor.

No whistle is needed on tie-ball tosses. The ball should be thrown high and straight, so that players may jump and reach for it.

Call tie-balls at once. Be sure both players get both hands on the ball simultaneously. Hold the whistle if you are in doubt about a tie-ball, in order to give a player an opportunity to remove her hand or hands. Be ready for a toss-up; stay with the play, but out of the way of players. On a toss up, the official should make certain that none of the other players are behind her during the toss. The players should allow the official room to retreat from the center of action. If they block her way, they should be given a warning.

Violations

When a violation occurs, blow the whistle (a short, sharp blast) and indicate the team to take ball out of bounds. (This may be done by saying "Blue out," or, if voice cannot be heard, by raising arm and indicating basket of team that is to take the throw. Many teams like to have both the voice and arm signal, as the voice often cannot be heard except by the players near the official.) Have the ball put in play quickly from the sidelines opposite the spot where the ball was when the whistle was blown. When space outside is limited, no player of either team should be nearer than three feet to the out-of-bounds player, nor should the guarding player be permitted to lean or reach across the line, as this defeats the purpose of the three-foot area.

When a foul occurs, blow the whistle (a short, sharp blast), indicate the offender (raising hand over

head for personal foul), and place the ball on free-throw line. If the foul is called on a guard, be sure that the forward who was fouled takes the free throw.

The official calling the foul indicates the offender. If the umpire calls a foul, she should get the ball to the referee, who places it on the free-throw line and watches for violations. Still watching the play, the umpire reports to the scorers while the free throw is being taken.

In case of a double foul, call time-out, indicate offenders and nature of fouls, place ball at one end for free throw, then at other end for free throw. Signal results to the scorers. Take ball back to center for center throw, and signal for time-in.

Watch for warnings on players and be sure they leave the game when disqualified. Listen for coaching from the sidelines, be sure you are right, then penalize immediately.

During intermissions

At quarter-time and half-time help the scorers and timers to check up. Give them a chance to ask questions. Also go to both captains and ask them if there are any questions they would like to have answered. At this time if a girl seems to be puzzled about any foul or violation being called on her, ask her if you can make it clear to her. Explanations at this time do much to promote good spirit and to eliminate further fouling.

During time-out and at quarter-time be sure the players do not leave the court. At half-time recover the ball and if a change is to be made in the balls for the second half, be sure the other ball is ready.

If a foul has been made at intermission (substitute failing to report) ask the captains if their teams are ready. Blow whistle, call technical foul on offender or offenders, place ball on free-throw line and signal to timers for time-in. If both teams have offended, the ball is dead until the free throw has been taken at both ends. The ball is then brought back to the center and time is in when the ball is put in play.

Announce the score at the end of each quarter, unless a scoreboard is used. If a scoreboard is used, be sure it checks with the score in the book.

At the end of the game check the scorers' book to be sure that no errors have been made. If it is correct,

sign your name under the space for official, then publicly announce the score, unless it is visible to the audience. Do not sign scorebook or announce the score until checked, as your official connection with the game is terminated when you have signed the score book.

It is the duty of the umpire to make sure that scorers are recording goals properly. She should help the scorers by repeating the nature of the fouls and the name or number of the offender. She makes all decisions in any part of the court when the referee cannot see play, but does not call fouls when the referee can see the play to better advantage. The person best able to judge should call the foul.

Other points for umpires follow:

1. Watch out-of-bounds plays on own side of court and give decisions on them. Toss tie-balls in own half of court.

2. Watch for personal contact on jump balls, unless the referee prefers doing this herself, in which case watch the players near jump for holding and tagging.

3. Recognize substitutes and get them into the game quickly on "dead balls."

Notes in general

1. Gain the confidence of the players during the first five minutes of play by being decisive. The rest of the game will be steadier because of your influence.

2. Analyze and study tactics, i.e., juggle, bounce, bounce pass, pivot. If you are not a player at the present time you should analyze the tactics in the game by doing them. Try them all out on an opponent. Only in this way can you know what to look for as an official.

3. Violations. Watch particularly details of passing and carrying the ball, line violations and holding the ball more than three seconds on the court, and five seconds out of bounds. Never allow the checking of these violations to interfere with your seeing the more important violations.

4. Analyze and study personal and technical fouls. Be able to recognize overguarding the ball. This is one of the hardest fouls to recognize, since it is often difficult to determine whether the player with the ball brought it to meet the hands of the guard or whether the guarding player brought her hands forward and into the ball.

5. Remember the seriousness of personal fouls. Do not allow personal contact, but a distinction should be made between deliberate and accidental personal contact.

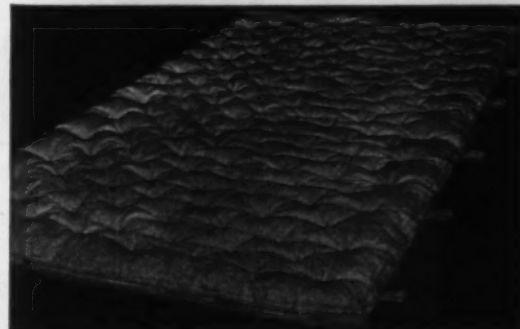
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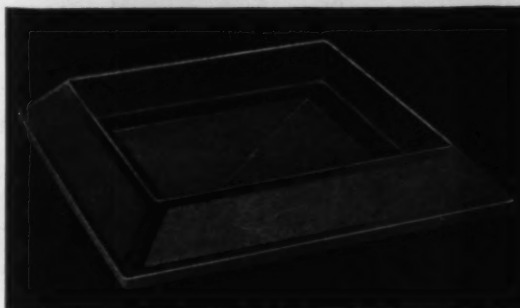
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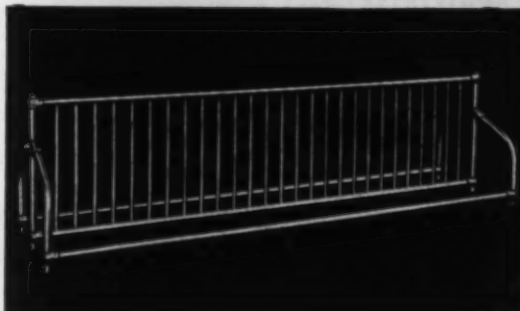
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New Books on the Sportshelf

HOCKEY. By Richard F. Vaughan in collaboration with Holcomb York. Pp. 363. Illustrated—photographs, diagrams and free-line drawings. New York: Whittlesey House. \$3.50.

DICK VAUGHAN, coach of hockey at Princeton, and Holcomb York, former head man at Yale, worked up such a wholesome respect for each other's astuteness in the days when they were matching wits across the boards, that during the off-season four years ago they joined forces and started work on a book. Their literary project, *Hockey*, was four years in the making, and the contents show it. Rarely has a sport been dissected and analyzed with the thoroughness of this volume. With its wealth of diagrams and drawings, the book gives a well-nigh perfect presentation of the fundamentals of the game.

The completeness with which the authors have broken down the sport and the manner in which the material is organized, make this volume ideal for coaching purposes. The text is divided into five general sections: first, the game from the spectators' standpoint; second, the individual elements, which include such techniques as stick-handling, offensive and defensive skating, play making, etc.; third, defensive elements; fourth, offensive elements; and lastly, the fundamentals of goal tending. Defense precedes offense in the authors' scheme of things because they believe that offense depends more upon the players' imagination and initiative than mechanical adherence to a systematized group of principles.

The various techniques are described in great detail and complemented with many excellent full-page free-line drawings taken from motion picture prints. Offense and defense are analyzed from two points of view, the individual's play and the work of the wings and the defense men as a unit. The authors have not missed a detail in their technical presentation. In their efforts to make the material as graphic as possible, they have utilized the tremendous number of 159 diagrams and 62 free-line drawings.

HEALTH GUIDES AND GUARDS. By Francis P. Wall and Dr. Louis D. Zeidberg. Pp. 380. New York: Prentice-Hall, Inc. \$1.40.

IN THIS revised text a section has been added on the value of special diets in various diseases. A second part on community hygiene, comprising 13 chapters, has also been included. Minor revisions have been made throughout the original for the purposes of amplification and clarification. The material is clearly presented and contains several illuminating chapters on venereal diseases.

THE NEW Y.M.C.A. AQUATIC PROGRAM. Pp. 104. New York: Association Press. \$1.00.

AQUATIC instruction has long been a feature of the program of the many Young Men's Christian Associations throughout the country. To get some idea of the scope and significance of the Y.M.C.A. aquatic program, last year alone this program included 2,000 a day taught to swim and 7,000 a month qualified as life savers!

Not content to rest on their laurels, the Y. M. C. A.'s on May 9-12, 1937, held their first national conference on aquatics in Chicago, at George Williams College, to improve the leadership of the Y.M.C.A. in this field. This book is the first permanent printed volume on the results of the conference, although it has been preceded by a few summary articles and the official report.

The book is divided into six sections: (1) The national aquatic survey and Chicago conference. (2) Historical development of the national aquatic program. (3) Present status and trends of aquatics. (4) Philosophy of the aquatic program. (5) The national plan of organization and administration. (6) Principles of construction and maintenance of swimming pools.

The book should prove of interest to swimming men interested in Y.M.C.A. aquatics, and particularly so to the lay membership who could not attend the Chicago meeting.

MAJOR LEAGUE BASEBALL. By Ethan Allen. Pp. 253. Illustrated—photographs and diagrams. New York: The Macmillan Co. \$3.

BASEBALL books most certainly have not been a drug on the market these days. Before *Major League Baseball* crossed our desk we hadn't read a new book on the sport for years. But if books on baseball are few and far between, they are worth waiting for, if they come as good as this one.

The Allen opus is one of the finest compilations of inside baseball we have ever seen. The former Cincinnati flychaser may not be as spry as he used to be in the outfield, but as a baseball writer he can cover more ground than Tris Speaker ever dreamed of. In his book he not only covers the conventional fundamentals with a fresh thoroughness, but he delves into the subtleties of inside baseball in a manner in which only a man who has played major league baseball can duplicate.

The book is Mr. Allen's in every possible sense. He wrote the text, took the pictures and drafted the diagrams. Even for a man who holds both a B.A. and an M.A. college degree, this is quite an achievement. To illustrate his book, the veteran outfielder set up and took over 200 pictures of big league players, arranging most of

these pictures in full-page plates. These pictures illustrate everything from curve balls and tagging runners to coaching positions and how to adjust a pair of sun glasses.

The main body of text has been organized into three divisions: defensive baseball, offensive baseball and management. These divisions have been broken down further into many sub-sections in which the assignment of every player in every conceivable situation, both on offense and defense, is explained in great detail. In presenting the defensive assignments on fly balls, the author makes excellent use of a series of six white on black diagrams. Each diagram shows a different type of fly ball and the manner in which all nine men maneuver to meet the particular situation. This simple but effective scheme is also used to illustrate the types of bunts to lay down under varying conditions.

Mr. Allen's book is a complete manual of baseball, and will answer any question the coach, player or spectator can pose. It is written with directness, clarity and with the avoidance of all uncommon terms. As a coaching aid and a reference, the book is a giveaway at \$3.

TABLE TENNIS. By Coleman Clark. Pp. 109. Illustrated—photographs and drawings. New York: Prentice-Hall, Inc. \$1.60.

COLEMAN CLARK'S writings on behalf of the great American basement pastime have done much to elevate the game to the prominence it now enjoys in our schools, recreation centers, industrial plants, etc. *Table Tennis* is the second book that Mr. Clark has turned out on the game, his first being *Modern Ping-Pong and How to Play It*.

The former national champion's latest effort contains the same basic information as his previous book, but covers the subject in more detail and brings the material up to date. He describes in clear, easy-to-follow terms all the various tricks, grips and plain and fancy shots the player needs to master the game. He shows you how to develop weird serves and returns and how to handle the various types of smashes and chops.

The technical material is organized under the following headings: the grips, the strokes, spin, the serve, how to win, and doubles. The book also contains a history of the game, how to select your equipment, a complete set of the latest rules, and how to organize and run a tournament. Many of the photographs he uses to illustrate the text show the champions of the game in action.

When Mr. Clark wrote his first book in 1933, "ping-pong" was a copyrighted term being used by Parker Bros., Inc., as the name of a brand of equipment. The name of the game was completely divorced from its commercial tie-up several years ago when the United States Table Tennis Assn. came into existence.

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... Especially important are the drawings made from motion picture prints and used in conjunction with many of the diagrams. These pictures eliminate non-essential detail and help visualize the moves, strokes, and plays described.

BETTER BASKETBALL

By FORREST C. "PHOG" ALLEN, Director of Physical Education and Coach of Basketball, University of Kansas. 490 pages, 6 x 9, \$4.00.



Incorporates many helpful facts for the player, the trainer, the official, each in his own phases of the game. Gives the coach a complete methodology for developing every factor of team and individual skill. Covers tactics of coordinating the play, developing team offense and defense in its most up-to-date form. Includes novel group exercises for developing player skill without handling of ball. Demonstrates applied psychology in true tales involving those human elements that help players win victories under adverse conditions.

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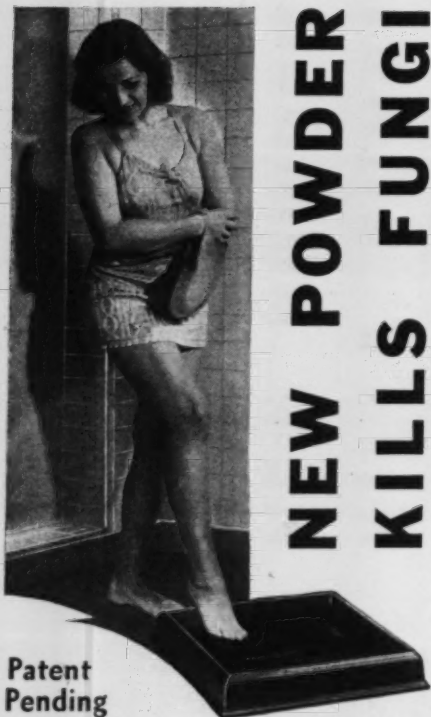
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Basketball Brain Teasers



By H. V. Porter, Secretary Basketball Rules Committee

THE close proximity of the basketball playing floor and the bleachers gives the spectators such a plain view of the various fouls and violations that it encourages the average fan to think that he is competent enough to call the turn on any of them.

The general public is not aware of the fact that a basketball official must spend many hours in preparation for his work and must pass a comprehensive rules examination before he can be classed as a certified official, a test that would sorely shake the confidence of many of the self-confessed "grandstand lawyers."

The examination published by the National Federation and used by many of the state high school athletic associations for testing the rules knowledge of the official, is a large folder made up of seven closely-printed pages. There are a total of 112 questions involving approximately 500 decisions which must be made by the writer. In order to determine which of these decisions are causing the most difficulty, 100 representative papers were checked and the results tabulated.

A tabulation showed that of the 112 questions, there were only three that were answered correctly by all of the writers. They all knew that a team may take five time-outs without penalty, that end lines four feet behind the plane of the backboard constitute a legal marking and that when there is a held ball outside a free-throw lane and within three feet of the end line, the jump should be at the nearest spot which is six feet from the end line. In no other of the 500 decisions was their universal accuracy.

In a number of cases fully ninety percent of the writers were in error, some of these errors occurring in connection with situations which are

quite common in any game. A few of them were more or less technical and were in connection with situations which arise perhaps but once in a season. Following are the questions which were answered incorrectly the greatest number of times. The correct answers follow immediately after the last question.

QUESTION 1

A1 is fouled during a try and at the same time A2 is fouled by both B1 and B2. (1. Goal made— 2. Goal missed— Enter proper number of free throws.)

QUESTION 2

A1 and B1 are jumpers at A's free-throw line and B1 taps ball out of bounds. But (a) A2 crosses restraining circle before ball is tapped. (1. B's ball out of bounds) (2. Jump again.) (3. Violation.) (b) A2 and B2 both cross circle too soon. (1. Jump again.) (2. A's ball out of bounds.) (3. Jump at center.) (c) A1 leaves jumping spot too soon and B2 crosses circle too soon. (1. Award free throw to B.) (2. Jump again.) (3. Disregard penalties and jump at center.)

QUESTION 3

A1 is fouled flagrantly as he is throwing for goal and simultaneously A2 is flagrantly fouled. (1. Goal made— 2. Goal missed— Enter proper number of free throws.)

QUESTION 4

A1 holds B1. B2 attempts free throw and is successful. Before the ball is thrown in, the mistake is discovered. (1. Official should cancel point and start play at center.) (2. Official should allow B1 to make the free-throw try.) (3. Official should cancel point and award ball to A at end.) (4. Point should be cancelled if mistake is discovered several plays later.)

QUESTION 5

Official should blow his whistle. (1. When a field goal is made.) (2. When ball crosses plane of the end line on the throw in after a successful goal.)

(3. When ball is thrown in from out of bounds to start second quarter.) (4. When gun sounds to end quarter.) (5. When ball is thrown in from out of bounds after time has been out.) (6. When ball lodges in support of basket.) (7. When ball reaches highest point on toss to start overtime.) (8. As soon as A2 touches ball [no possession] in back court after illegal return from front court by A1.) (9. When A1 has possession in court and B1 on boundary touches ball.)

QUESTION 6

A1 is injured while the ball is in play. The play is completed by a try for field goal which is not successful and the ball bounces on ring several times. Official should blow his whistle. (1. When ball leaves shooter's hands.) (2. As soon as basket is missed.) (3. After the rebound ends.)

QUESTION 7

While ball is in the air on a free throw by A1, A2 pushes an opponent. Try is successful. (1. Goal counts.) (2. No goal and B awarded free throw.) (3. Goal does not count and penalty for foul is disregarded because ball was dead.)

QUESTION 8

Ball is out of bounds when it (1. Touches sideline.) (2. It touches official standing on sideline.) (3. Dribbler in control steps on line while not touching ball.) (4. It touches ceiling.) (5. It comes from in bounds and touches player who is touching side-

line.) (6. It touches top of backboard.) (7. It passes through plane of sideline.) (8. It touches back of backboard.) (9. A1 has possession and pivots so that ball touches B1, who has foot on sideline.)

QUESTION 9

A new ball is not provided for a game. (1. Home team must provide two used balls from which to choose.) (2. Referee has authority to designate visitor's ball as game ball.) (3. If used ball is provided, Referee should not allow either team to practice with it.)

QUESTION 10

Penalty is automatically declined in the following: (1. A1 attempts free throw and is successful but B1 is in lane too soon.) (2. A1 is fouled while attempting try but continues his arm motion and ball goes in basket.) (3. On jump at free-throw circle, A1 taps ball in basket and B1 crosses restraining circle too soon.) (4. On jump at free-throw circle A1 taps ball in basket and B1 leaves jumping position before ball is tapped.) (5. A1 tries and while ball is circling ring B1 touches net or ring but ball goes in basket.) (6. On free throw by A1, B1 and A2 are in the lane too soon.) (7. On free throw by A1, B1 waves arm to disconcert the thrower but ball goes in basket.)

QUESTION 11

A1 is in possession in his back court. He passes ball and ball touches B1, who is in A's back court, and then goes across division line where A2 secures

possession. A2 passes ball to A3 in back court. (1. Violation.) (2. Legal return.) (3. Original count ended when it touched A2.)

Answers and Comments

The correct answers to the questions and comments on each follow:

QUESTION 1

Answer: 3—3. **Comment:** It will be noted that only one free throw is allowed for each foul when several fouls are committed simultaneously by the same team. This is in accordance with No. 330 in the National Federation play situation book. The reason for the interpretation is that there was a feeling that since only one free throw is allowed each team in the case of a double foul, the same thing should apply to simultaneous multiple fouls.

QUESTION 2

Answer: (a) 1 and 3. (b) 1 is correct. (c) 2 is correct. **Comment:** The most common error in this question was in connection with part (a) where many of the writers indicated that the teams should jump again. In this particular case the first violation was the crossing of the restraining circle and consequently the second violation occurred while the ball was dead. In such a situation it is customary to disregard the second violation. A number of writers specified jump at center for part (b) and penalty for the technical foul for (c) (Concluded on page 29)

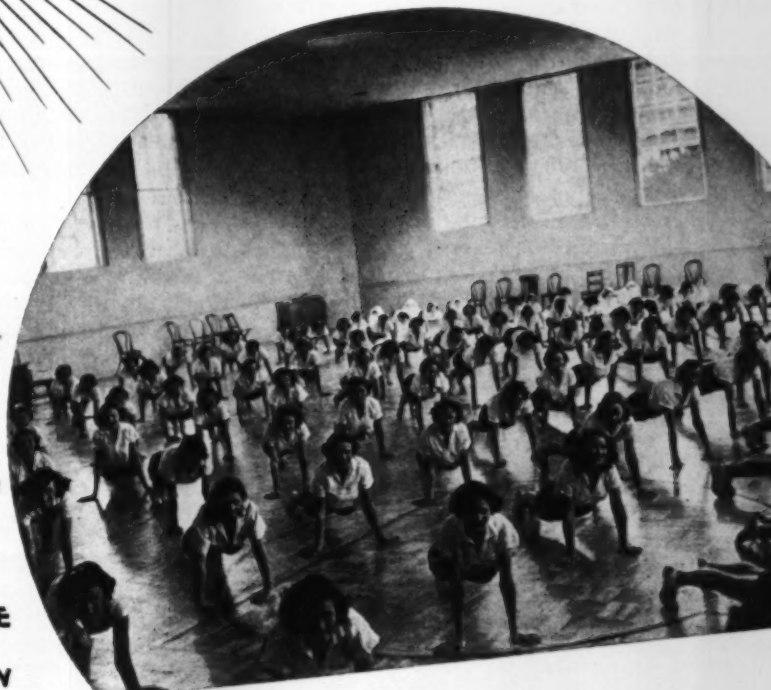


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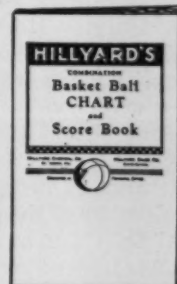
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A B C D E G

Nutritional Values of Vitamins in Athletics

By Dr. Robert J. Fraser

This is the second of a series of two articles on the values of vitamins in athletics by Dr. Robert J. Fraser of Chicago. Last month the author dwelt on the mechanical and nutritional phases of athletic conditioning, and the effect of the vitamins on the muscles and nerves. He now continues with the effect of the vitamins on general health.

PROBABLY the most important vitamins in regard to general health, vitality and stamina, are the vitamins A, B, C and G. Although the maintenance of these health assets are promoted by a combination of vitamins, a marked deficiency of just one of these vitamins will cause a loss of this function. And even though the other vitamins are present in adequate amounts, a pronounced deficiency of the one vitamin cannot be compensated for by the others. This emphasizes the importance of a balanced intake of all the vitamins.

Vitamin A has been shown to increase vigor and vitality and to be essential to a feeling of well being. Batchelder found that a deficiency of this vitamin caused a progressive loss of vitality and also led to a nutritional failure of the body. Nicholls, working among the natives of India, found that a vitamin A deficiency caused physical weakness throughout the body.

Experiments by the British Medical Research Council proved that vitamin B is needed to promote health in the adult, and to help maintain the body weight. This vitamin is also needed to help complete the oxidation, or "burning up," of starchy foods within the body. Starchy foods are our main energy-giving foods. Dr. Quigley states that in the presence of a vitamin B deficiency starchy foods are not completely, nor properly, oxidized in the body. This means that toxic materials will be formed, which act to hasten the appearance of fatigue.

Because of the much heavier physical activities of athletes, they need, and eat, more food than the average person. Cowgill has found that the "more food eaten the more vitamin B the body needs to insure its complete oxidation and utilization by the body." Furthermore, "the vitamin B

requirement of the body is increased with greater physical activity." In other words, when an individual eats more food, gets more exercise, or does heavier physical work, his body needs more vitamin B than usual. But, as so often is the case, no provision is made to supply this increased demand. The inevitable result is the development of a vitamin B deficiency with all its attendant ill effects. No matter how much athletic activity is taken it cannot offset or compensate for it. In the presence of a deficiency, or in instances where increased bodily requirements are not provided for, the addition of extra amounts of vitamin B to the diet should prove very beneficial.

Building up resistance

Among the functions of vitamin C is the promotion of a better state of health and vigor. Experimentally, Sherman and Ellis found that "nutritional well-being" progressively improves as increasing amounts of vitamin C are added to the diet. In deficiencies of this vitamin, Plimmer found a loss of vigor and well-being. One becomes easily fatigued after only moderate activity or work. This is an important point because the average person does not get enough vitamin C in his regular diet.

Vitamin G is necessary for the promotion of a normal state of nutrition. It has been found that liberal intakes of vitamin G produces better-than-average-health and better-than-average-nutrition. Both of these conditions of health are of the utmost importance to athletes. H. C. Sherman found that increased intakes of vitamin G produced increased vitality and physical well being through succeeding generations of experimental animals. In humans an abundant intake of this vitamin is definitely essential to health and well being. In deficiencies of this vitamin there is a loss of weight and physical weakening of the body.

Another set of factors which cause the loss of athletes from time to time, are infections of various kinds. In the promotion of a high degree of natural resistance, the vitamins A,

C and D play important roles.

One of the most important functions of vitamin A is its power to increase general resistance against infections, including colds. From clinical experience, R. C. Robertson noted that a deficiency of this vitamin is an important factor in lowering the general resistance to infections. Certain commercial concerns require their employees to use either cod liver oil, or haliver oil (which are both very rich in vitamins A and D), during the winter months because of the effect they have on raising the resistance and preventing colds.

Takashi noted a marked lowering of resistance to bacterial infections in animals on a diet deficient in vitamins A and C. Yavorsky, King and Almaden found by tests and examinations at autopsy, that generalized infections are common among those with a low vitamin C content of the body tissues. A. F. Hess states that, "in a vitamin C deficiency there is a decreased resistance to bacterial infection."

Vitamin D plays an important part in maintaining the natural resistance of the body against infections. "The paucity of available vitamin D in northern climates during the winter may be associated with the seasonal occurrences of respiratory infections," reported Robertson. The great mass of evidence indicates that a reduction in resistance to infections occurs in animals suffering from a prolonged deficiency of vitamins A and D. Clinical experiences have shown this also to hold true for human beings.

Protective Foods

Dr. Langstroth of San Francisco, some years ago, made a study of 501 of his patients who were suffering from common degenerative diseases. He made a thorough and careful study of their regular dietary habits during the period of time when their diseases were developing. Langstroth found that the lower the percentage of "protective foods" in the regular diet, the more frequently these degenerative diseases occurred and the

(Concluded on page 40)

Basketball Quiz

(Continued from page 27)

part (c). In part (b), there is a double violation but this is one case where a double violation does not result in the ball going back to center. In (c) this is the one exception to the general rule that a violation does not offset a technical foul which occurs at the same time.

QUESTION 3

Answer: 2—2. **Comment:** This is a double foul and the rule specifically states that in the case of a double foul only one free throw is awarded each team and this applies regardless of whether the goal is made or missed.

QUESTION 4

Answer: 3 is correct. **Comment:** There were two common errors in connection with this question. A number of writers thought the proper player should be allowed to make up the throw and others thought the points should be cancelled, even though discovered several plays later. There are several situations where a foul may be called, even though it is discovered several plays after it was committed.

QUESTION 5

Answer: 6, 8 and 9 are correct. **Comment:** The parts of this question that caused the most difficulty were 3, 5 and 7. The official does not signal time-in with the whistle when play is resumed by a throw-in from out of bounds. If he uses the whistle at all it is merely to attract the attention of the captains to determine whether they are ready for play to begin.

QUESTION 6

Answer: 1 is correct. **Comment:** In this situation the play is completed when the ball leaves the shooter's hands. If it were not handled this way, there would be a number of complications in connection with rebounds.

QUESTION 7

Answer: 1 is correct. **Comment:** Answer number 3 seemed to be the popular one for this question. This was probably on the assumption that the ball is dead during a free throw. This is not the case. The ball is declared dead at the time a foul is called but the dead ball period ends when it leaves the free-thrower's hands.

QUESTION 8

Answer: 1, 2, 3, 5, 8 and 9. **Comment:** The parts of this question which caused the most difficulty were 3, 4 and 9.

QUESTION 9

Answer: 2 is correct. **Comment:** The errors in this question were due to the failure of the writers to note the change which was made in the rule relative to the ball.

QUESTION 10

Answer: 1, 3, 4, 5 and 7 are correct.

QUESTION 11

Answer: 1 and 3 are correct.

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COACHES CORNER

Coach of the year: Charlie Harrison of Kankakee, Ill., the only high school man to turn out the two service team captains of the same year. Here he is with his two boys: Allen Bergner of the Navy, and Harry Stella, Army.



If you have something for this column send it to Bill Wood, University High School, Iowa City, Iowa.

Loren Schultz, Iowa City Press-Citizen sportswriter, relayed a story to us the other day that is a classic. It seems that Dr. Harold Bruce, Eastern track coach, was at Lafayette College back in 1909 when Warner was coaching the Carlisle Indians. One day Dr. Bruce called Warner up and asked if the Carlisle track team could come over to Lafayette for a meet.

"I'll bring 'em over for \$400," Pop replied. It was a huge sum in those days of \$50 guarantees, but Bruce begged, borrowed, and took up a collection to raise the money. When the train pulled in, Pop got off. There was an Indian with him. Two others got off the second car, and finally a couple of more dropped lazily from the rear coach.

"Where are the rest of them?" Bruce asked.

"Don't worry," said Pop, "they'll be along. Let's eat." All that day Bruce pestered Pop for information, but he was evasive. Finally in desperation Bruce went to the president of the school. The president ordered Bruce to "Go find that Carlisle track team."

"Please, Pop," Bruce pleaded, "where's your track team? I've got to know. The boss is on my neck."

"They're here," Pop replied, "you saw them get off the train with me."

"Those five men?" Bruce gasped. When Pop nodded, Bruce almost passed away. The next afternoon Pop's five Indians faced Lafayette's 42 palefaces in all events. A fellow named Jim Thorpe won five firsts and was second in the 220. A couple of Indians named Arquette and Tewanima finished one-two in the half-mile, the mile and two mile runs. And they ran the two miles (after all those other races) in less than 10 minutes. Shenandoah won the 440, and the fifth Indian, Johnson, was

second in just about everything. Carlisle won the meet 71 to 31.

The same Mr. Schultz calls our attention to some interesting statistics on the University of Iowa—Monmouth College game which Iowa won 37 to 34. "In the first half with 13 minutes gone, the score stood 13 to 13, then with 15 minutes past the count was 15 to 15; at 17 minutes it was 17 to 17 (How long does this go on?) and with 19 minutes gone the Hawks and Scots were tied 19-all!"

Here's another sidelight on that balloon advertising stunt. Athletic Director H. Q. Tucker of Rome, Ga., used it last year as part of the new field dedication festivities preceding a game with Georgia Military Academy of Atlanta. "The captain of the team winning the toss cut a string releasing about 100 gas-filled balloons of some eight different colors. When the balloons were found in Alabama, about 150 miles away, several days later, only two were intact, a red one and a white one. These are the colors of G.M.A., the winning team!"

Virgil Wagner of Belleville, Ill., must have been reading about the mighty exploits of one Red Grange just before the game with Collinsville. Wagner carried the ball just six times for a total of 102 yards and three touchdowns. Meanwhile he passed twenty yards for another touchdown.

It isn't often that you can be high scorer for both teams, yet Clarence Miller of the Waterville, Minn., High School team managed to turn the trick in the 45 to 4 rout of Janesville. Miller scored 16 points for his own team and then on a jump ball accidentally tipped in a goal for his opponents. Janesville's other two points were scored on free throws by different members of the team.

When Coach Francis Sueppel of St. Mary's of Iowa City, Iowa, wants to report his line-up in a hurry, all he has to say is "Chadek and Bock." At one forward is the high-scoring co-captain George Chadek; at the other forward is the equally fast-stepping co-captain Jack Bock. The guard duties are taken care of by Jim Chadek and Bill Bock. The center job falls to Ed Chadek.

Those Notre Dame captains are certainly cooperative. Although his basketball team had already taken the court, Captain Earl Brown remained with the football team until after the season's finale at Southern California. And now the 1939 football captain-elect, John Kelly, has reported for basketball in an attempt to fill the gap at center left by the graduation of Paul Nowak.

Whenever a coach tells a boy that he is the best tackler on the squad, it means something to that boy. How much more it must mean to a player when he has only one arm. Joe Poplawski, who has just completed four years as a regular on the football, basketball, and baseball teams at University High of Normal, Ill., has deserved the high praise bestowed upon him by Coach Burt O'Connor. In falling from a tree a few years ago, Poplawski injured an arm so severely that amputation was necessary. In spite of his handicap he developed into a fine athlete.

Superintendent M. B. McCurdy of North English, Iowa, comes right back at us for that item we reported in the December issue. "In order to keep the public from getting the idea that we are playing football entirely in the dark, please allow me to explain that Mr. Hollingshead has weak eyes and that from the way he called them that night a number of us were not sure

he knew we were even using a ball. Of course we have only about 40,000 watts of light, but it does pretty well for those who can see in the day time. Yours for better lighted fields."

Shorty Adair of Waynesville, Ill., could have used a little extra light in that game with Beason played recently. He flipped one in the wrong basket at the wrong time and tied up the game at 23 to 23. In the second overtime Beason won on a basket by Roos.

That Associated Press story of a sharpshooting forward from Miami, Okla., scoring 33 points in a game in which his team shut out Pryor, 67-0, brought back fond memories of the first game in which we ever played. That also was a shut-out, 66-0, and an ace forward scored 33 points while the guards and center were scoring an equal number combined. We were the other forward. After the game our coach made some wisecrack about having a candidate for the all-American standing forward position.

Lest we forget. Happy New Year to every high school coach and official in America. Do your resolutions include a few contributions to "Coaches' Corner?"

BILL WOOD

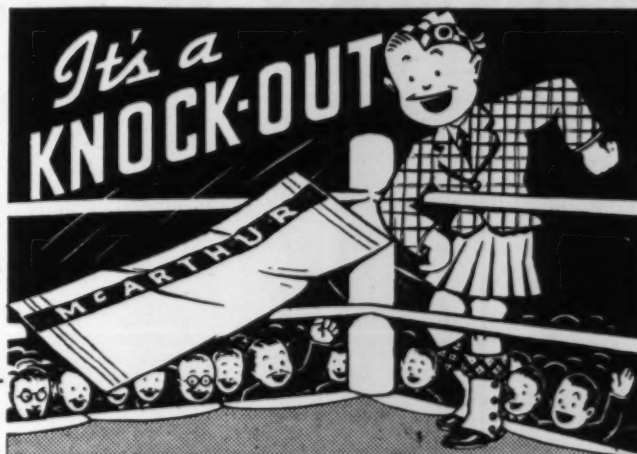
Sound Equipment

(Continued from page 13)

ment or equipment that may be moved about from the gymnasium to the athletic field or to other locations in or around the school. The portable or mobile type of equipment is designed in such a way that it may be used for either voice or music amplification. It is extremely flexible and can be adapted to practically any situation requiring low to medium power.

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The cost of good portable or mobile sound equipment ranges from seventy-five to three hundred dollars. Permanent or semi-permanent equipment of good quality will cost two hundred dollars or more. In all situations where the purchase of equipment is being considered, it is advisable to call in a sound engineer to make recommendations. His services are available without cost or other obligation and may save many dollars in installation and upkeep.



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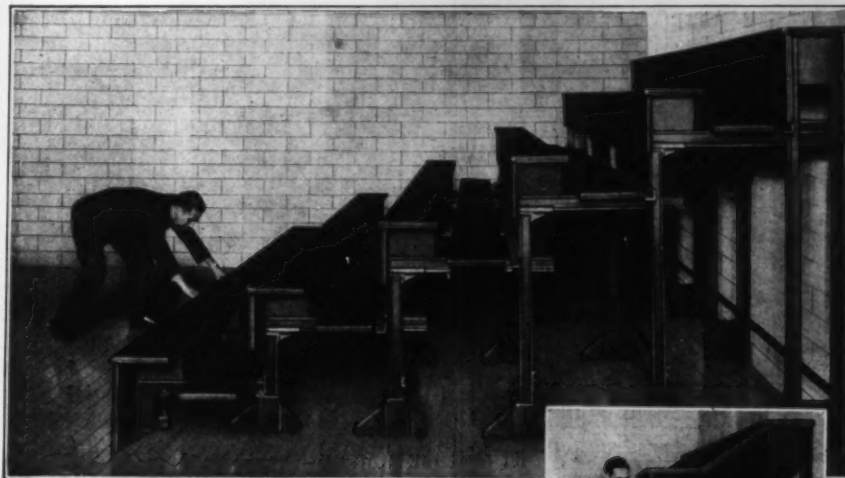
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AN ERROR INDEX AS A COACHING AID

By Oren C. Selgelid

A statistical observation of individual errors in the fundamentals of passing and ball-handling

Oren C. Selgelid has been getting results at Albert City, Iowa, with a basketball-charting system that checks the progress of the players on the more important fundamentals of the game.

DURING the past two basketball seasons at Albert City, the writer was forced to campaign with exceptionally green material. The dearth of experienced hands at the beginning of each of these seasons, however, did not necessarily imply that the prospects of a disastrous season loomed in the offing. For although the boys were unseasoned, they did show rare promise.

The ultimate success or failure of the team, as a result, rested squarely on the shoulders of the coach. With proper development the boys could produce; on the other hand, if they were misguided or badly handled all their latent ability would go for naught. It was strictly a high school coach's problem. The influence of the coach is very strong on athletes of all ages, but it is particularly strong on the schoolboy athlete. The boy at this age is very impressionable and more easily and deeply influenced by the example of his teammates, the group spirit and particularly by his athletic coach. What the coach can get out of him is directly proportional to the ability the coach has as a teacher and a psychologist.

At Albert City the situation called for the proper development of the players, in the easiest manner, with the least amount of outspoken criticism. The adolescent boy is a sensitive creature and cannot take criticism with the same degree of complacency as his athletic brother—the college athlete. It was with this thought in mind that the coach hit upon the idea of devising an error indicator which would assist him in the development of the players and at the same time give conclusive proof to the boys that any criticism was justly earned.

This error indicator took the form of the statistical chart shown on this page. During each game the coach selected two boys to sit beside him on the bench and take down trenchant notes on the game. After the contest these notes were compiled and tabulated on charts and tacked on the bulletin board in the locker room where the players could always see them.

When the Albert City coach takes the boys down to the dressing room

Played at Albert City	Player	Fumbles	Poor Passes	Personal Fouls	Field Goals		Free Throws	
					Made	Missed	Made	Missed
Date 1/27/37 Score ↓	Schuelke	3	1	2	0	2	0	1
	Thieman	1	2	1	1	8	2	1
Opponents 22	Miller	2	5	0	1	8	1	4
	Skog	4	2	3	0	1	2	2
	Clausen	1	3	2	6	14	0	1
	Blomberg	1	2	2	2	8	2	1
Albert City 31	Goerner	0	1	0	1	2	0	0
	Satory	1	0	0	1	3	0	1
Referee: C. V. Elsten								
Umpire: O. M. Dansel								
	Total	13	16	10	12	46	7	11

between halves, he also collects the books from each of the boys who are gathering the data. These notes take the sting out of the coach's distasteful job of analyzing and criticizing each individual's play. He can walk over to each boy and without humiliating him, show the figures collected during the first half. Instead of giving him a personal observation of his play, the coach may say, "Look here, Ted, the records show that you fumbled four good passes, made five bad ones of your own, missed three out of four free throws, etc." The coach can then explain why the player is making them.

The reasons will vary from game to game and varied conditions will demand varied explanations. In this way the boy is told exactly what is wrong with his game and where he will have to make improvement if he wants to be instrumental in winning games. This procedure is followed with each boy, after which they are given a group talk and sent out to the floor.

The next day before practice each boy is supposed to look at the chart on the bulletin board before going out on the playing floor. From the

coach's standpoint, he should be chiefly interested in getting his boys to register a zero in the second, third and eighth columns. The boys who come closest to doing this consistently are usually the better players and should hold down the key positions on the team.

During a season's play a chart of this type gives the coach a valuable index as to whether he is developing to any extent two of the more important fundamentals of basketball—passing and ball-handling. If there is a general improvement game after game, he can rest assured that he will have a good team by the time the tournament rolls around. If there is no improvement, it may be necessary to install some new practice drills in order to develop these very essential fundamentals. In any light it gives the coach a positive clue as to the strength and weakness of each player.

A thermometer chart is another type of device used at Albert City to motivate the work of the boys in regard to free shooting. There are as many thermometers placed on a large, single chart as we have games. The chart is usually secured on the

most prominent bulletin board in the school, for everybody to observe. The chart is a rectangular shaped sheet with the thermometers reading from left to right. For the first game, the thermometer on the far left is used to give a statistical presentation of the free throws. The free-throw analysis for the next game goes on the second thermometer; the dope on the third game follows on the third thermometer; the fourth on the fourth; etc.

If the team made four free throws out of twelve, the "mercury" in the center would rise one-third of the way up for a reading of 33. If the boys sunk four out of eight fouls, the red indicator would go up to 50. By the middle of the season the fluctuations of the "mercury" paint a graphic picture of the progress the team is making in its free-shooting ability. Every rise indicates progress, a drop decline. The thermometer only registers up to 99. The reason for this is an inscription across the top of the chart in large print: *Make 100% of Your Free Throws and Break the Thermometer.*

The name of our opponent is placed at the bottom of the thermometer and the number of our free throws, converted and missed, follow in order below. There is another line in large print across the top of the chart, which reads: *Free-Throw Thermometer for Each Game of the 19—19—Basketball Season.*

Many games are won or lost because of the ability or inability to make these charity tosses. With the entire school watching the progress of the team in regard to free throwing, the boys on the squad will usually be inspired to work doubly hard on this phase of the game.

How data is collected

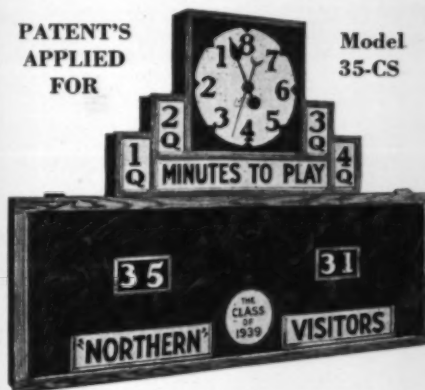
In gathering the data for the charts the following method is used: Two boys are selected from among the substitutes who will usually make the trips. (They can also act as managers, if you wish.) One boy keeps track of all the fumbles and poor passes; the other boy keeps tabs on the number of field goal attempts by each player and the spot of try. The other statistics are lifted out of the home team's scorebook.

Many coaches, including the writer, have been guilty of going down to the dressing room between halves and giving the boys the devil about their playing without telling them a thing about what was really wrong with their game. By using plain facts and figures, which any boy can readily understand, the coach can give them a better idea of their mistakes.

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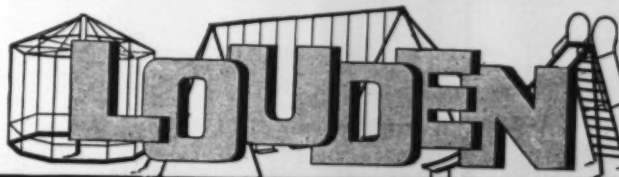
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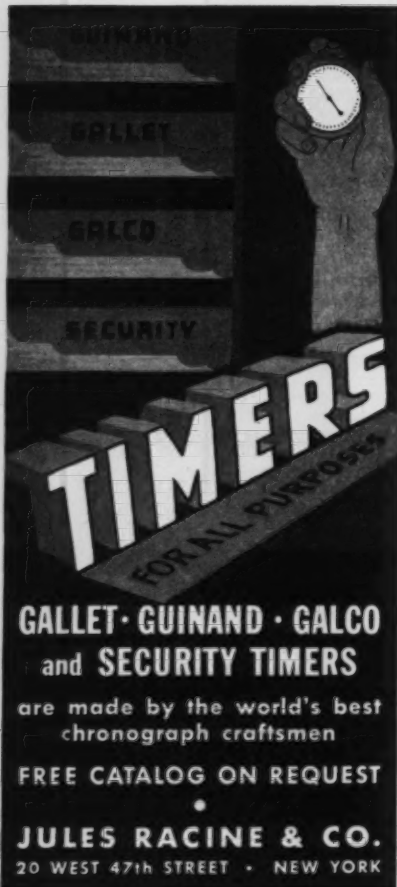
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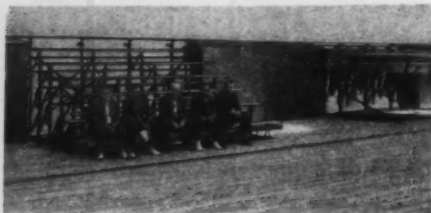
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Universal bleachers combine, safety—convenience—ease of operation—compactness—comfort—and low initial and maintenance cost in a single attractive installation.

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UNIVERSAL BLEACHER CO.
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From the States

This department includes correspondence from state high school coaches' associations and state high school athletic associations. All associations are invited to participate.

National Federation Notes

THE annual meeting of the National Federation will be held in Cleveland in connection with the National Educational Association congress on February 27. The meeting will be held at the Cleveland Athletic Club and all members of state association boards of control are invited.

During December a sectional meeting of the National Federation was held at Jackson, Miss. The meeting was well attended by representatives from Alabama, Florida, Kentucky, Illinois, Louisiana and Mississippi.

At a regional conference in Chicago the representatives of the central states recommended that a high school baseball day be proclaimed next spring by the various state high school athletic associations. This action was taken in an attempt to stimulate interest in the sport. The year 1939 is the one hundredth anniversary of the introduction of baseball, and the high school baseball day will be one way of celebrating the centennial.

Washington

Football grows

DURING the past football season a slight increase was reported in the number of high schools that fielded football teams. Statistics showed that 185 teams played the game in 1938, many of which were six-man outfits. Several schools switched to the abbreviated game last year, necessitating the formation of another league to augment the two that were started in 1937. Six-man football is growing in this state and many of the schools that have never played interscholastic football are seriously considering the possibility of taking up the six-man game next year.

The state high school athletic association sponsors no method of determining the football champion of the year, but a newspaper poll of 44 daily and weekly sportswriters give these ratings in Class A and B. The ratings for the past season follow:

Class A: 1. Aberdeen 2. Garfield (Seattle) 3. Marysville 4. Stadium (Tacoma) 5. Gonzaga (Spokane) 6. Kent 7. Everett 8. Pasco 9. Clarkson 10. Camas.

Class B: 1. Blaine 2. Onalaska 3. Marquette (Yakima) 4. Valley 5. Wabburg 6. Yelm 7. Sequim 8. Tonasket 9. Kalama 10. Rochester.

Had the poll been taken after Thanksgiving Day instead of before, the ratings may have read differently. On that day Aberdeen, Marysville and Camas — heretofore unbeaten — all

dropped their final game of the season. Marysville had not lost a game in five years before the Thanksgiving Day loss to Enumclaw.

Dale Holmes, Marysville halfback, scored 33 touchdowns during the season for a total of 198 points. Jimmy Newquist of Camas tallied 175 points. Onalaska completed its fifth unbeaten season despite the loss of its captain in mid-season when he was killed in a motor accident while the team was on its way to a game. Seventeen high schools went through the season unbeaten, the same total as in 1937.

HAROLD SHAW,
Puyallup, Wash.

New Jersey

Message to officials

BELOW the list of its approved basketball officials, the South Jersey Board prints the following message: "Schools and colleges participate in sports for the development of those attributes which go to build character and sportsmanship. In no other game does the official play such an important and conspicuous part as in basketball. The game is hard enough to officiate at its best, and the hearty cooperation of the players, spectators and those in authority is needed to get the most out of the game.

"What the spectators and players have a right to expect from an official: (1) Honesty and courage in making decisions. (2) A thorough knowledge of the rules and the ability to interpret them. (3) A spirit of comradeship rather than hostility. (4) Prompt and decisive judgment. (5) Announcements and decisions that can be heard and understood. (6) Prompt appearance for work in a neat, clean uniform.

"What an official has the right to expect from players, spectators and those in authority: (1) An appreciation of the fact that he has been engaged to officiate the game and will make decisions to the best of his ability and judgment. (2) That he must make lightning-like decisions and interpretations which, because of a difference in the angle of vision, may differ from yours. He may occasionally make mistakes, but that is to be expected in such a difficult occupation. (3) He should expect and receive the fullest support and cooperation from the authorities.

"The official should notify the coach at least two days in advance that he will work the game and put in an appearance at the proper time. This can be done by postcard."

The officers of the South Jersey Board of Approved Officials for 1939 are: Spencer M. Bennett, Atlantic City, president; Claud B. Kleinfelter, Trenton, vice-president; and Kenneth E. Smullin, Camden, secretary-treasurer.

CHARLES J. SCHNEIDER,
New Jersey H. S. Coaches Assn.,
Newark, N. J.

Idaho

New legislation

OF THE five amendments to the constitution that were proposed at the last meeting of the Athletic Association, only two received the necessary two-thirds vote and became effective January 1. The most important amendment was the 20-year age rule. Under this regulation a student will become ineligible for athletic competition upon reaching his twentieth birthday. The Association turned down a proposal to limit girls' basketball teams to one game a week, and also defeated a recommendation to lower the age limit to 19 years.

The State Board has decided to make a comprehensive study of athletic injuries in the state for the purpose of submitting an athletic insurance plan to the member schools in the spring. The Board also recommended that a boy be required to have at least 12 days of practice to his credit before being allowed to play football at the beginning of the season. It was further proposed that football players should have at least three days of practice during the week preceding each game. A minimum age of 15 years was recommended for boys to play on a varsity team.

Tournament dope

The Class A basketball tournament will be held at the University of Idaho, Southern Branch (Pocatello), on March 23-25, and the Class B tournament at the Lewiston Normal School on March 16-18. The State Board recommended a maximum 16-game pre-tournament schedule and a thorough physical examination for all boys who will participate in sub-district and district tournaments. This examination is required of all boys competing in state tournaments.

The last paragraph of Rule 8, Section 1, of the basketball code—a ruling which provides for additional rest periods during the quarters—will be applied to every game played under the auspices of the Association. In girls' basketball, the two-court game was approved by the Board of Control.

The system of three state track and field meets was again approved by the Delegate Assembly. In Idaho no boy may run more than one distance event in any one meet. This ruling includes the 440-yard run which is now classified as a distance event rather than a dash. The new type of discus was officially adopted for all track meets held under Association rules.

Another very important ruling will prohibit any member of a CCC organization from competing in high school athletics. At the present time no member school is permitted to compete against an athletic team that is not a high school group.

E. F. GRIDER,
Idaho H. S. Athletic Assn.,
Boise, Ida.

Illinois

Effect of the new rules

EARLY games in this state indicate that most of the rules changes are being accepted with enthusiasm. There is a difference of opinion relative to the rule opening the outer half of the free-throw circle. The coaches and officials in the vicinity of LaSalle and Ottawa have petitioned the state athletic association to invalidate this rule change for Illinois games. The state authorities have not seen fit to act favorably on this petition and the rule will be used as written. At the end of the season, the state committee will be in a position to tell whether its continuance is advisable.

Quite a number of schools are using the officials' time-out in the middle of the second and fourth quarter. This extra time-out period is used by mutual agreement between the two contesting teams. At least one official writes to laud this extra time-out rule. Apparently he has confused the purpose of the rule slightly because his remarks indicate that he thinks it was put in in order to give the official a rest period in the middle of the two quarters. As a matter of fact, when only one official is used for a game he often does need a breathing spell, but the committee did not have the official in mind when they provided for the "officials' time-out."

The matter of refusing to allow a substitution after a goal, gives rise to a number of complications. Because of these complications, a number of coaches and officials have voiced the opinion that substitutions should be allowed so that all such cases would be covered by the flat rule that a substitution may be made any time the ball is dead.

Experimentation reports

Early reports on the experimentation work being undertaken by the state basketball committee, reveal some interesting trends. (The lines of experimentation were described on page 34 of the December Scholastic Coach.)

Athletic departments which have been collecting statistics on the use which is made of the four-foot area behind the plane of the backboard, report several desirable effects. There are fewer times when the ball is declared out of bounds at the end of the court and players are often able to utilize the area behind the backboard to get the ball away from the congested area after a rebound. This relieves much of the crowding that usually occurs directly under the basket.

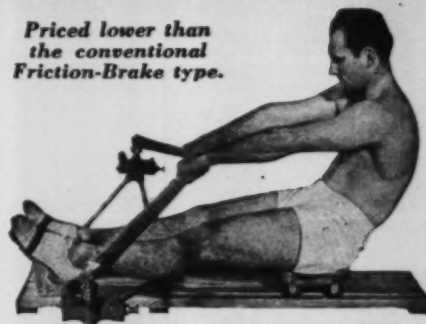
Extensive tests have also been conducted relative to the most desirable bouncing reaction of a basketball. In gathering statistics, three balls are used in each game. One of the balls is blown up to a pressure that will make it bounce 48 inches when dropped from a height of six feet. This is the minimum allowed by rule. The second ball

(Concluded on page 40)

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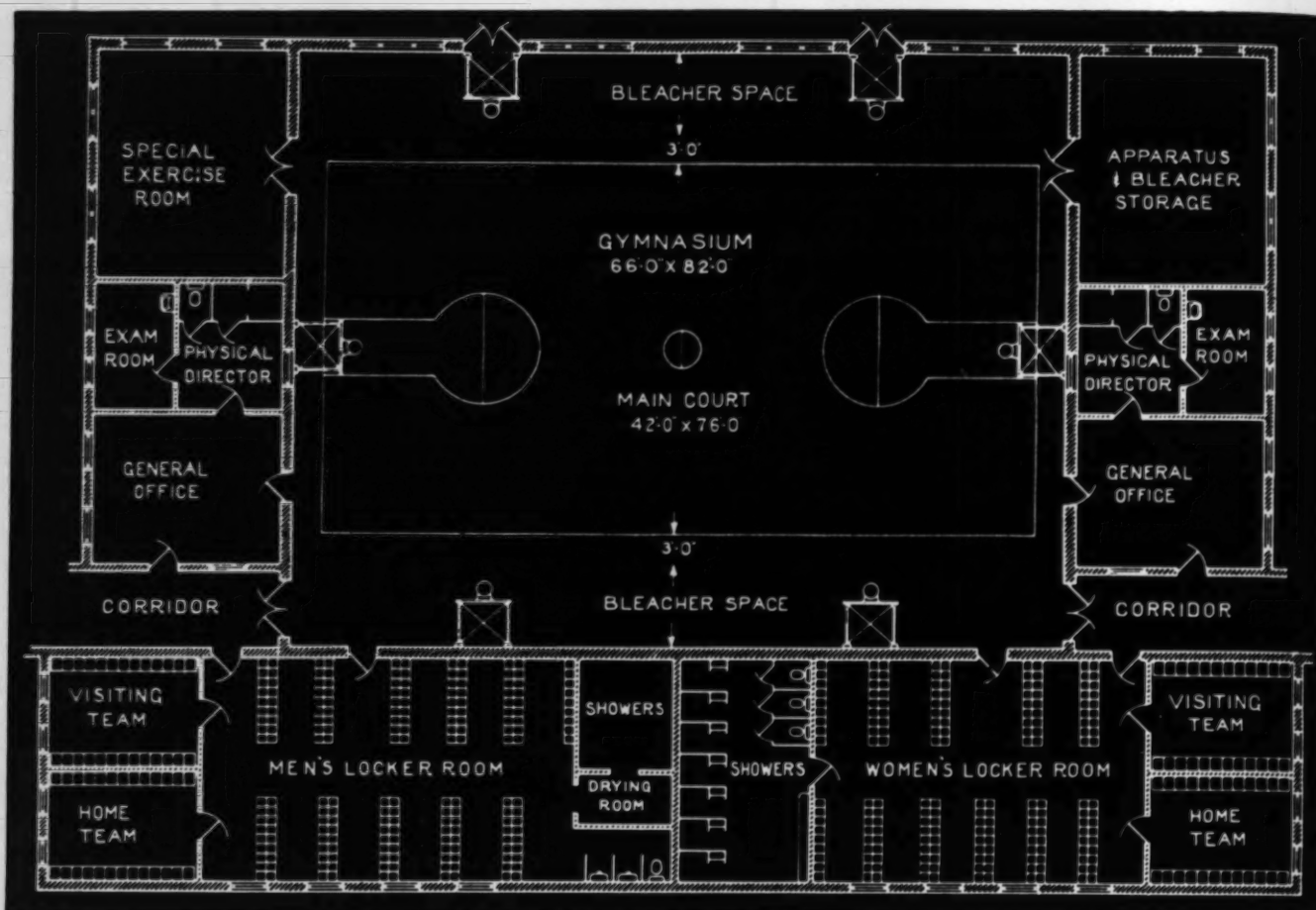


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This gymnasium is designed expressly for physical education work and organized recreation, and does not coordinate its functions with other units.

OUTDOOR AND INDOOR CLEANLINESS

SINCE dust constitutes both a physical and a hygienic menace to the athlete, it follows that the allaying of dust on playgrounds and athletic fields is both desirable and essential. Hence any method of dust control that can be applied both easily and cheaply should prove of value to the coach and other responsible individuals. Before describing such a method let us first outline the qualities that a good dust-allaying agent should have.

1. It must efficiently allay all dust.
2. It must not have an objectionable odor.
3. It must not stain clothing or stick to the feet so that it will be tracked over floors or walks.
4. It must not be injurious to the skin, eyes, or other parts of the body.
5. It must not cake or crust the surface of the field.
6. It must be cheap and easily applied.
7. It must be antiseptic in nature with germicidal properties.
8. It must shed water quickly and withstand the washing action of heavy rains.
9. It must give long service.

Sani-Soil-Set is an easy-to-apply dust-allaying agent that has been giving highly satisfactory results on many of our largest recreation surfaces. This

product is sprayed on. If the soil is of a clay type with a hard crust, it must be scarified to create a loose surface $\frac{1}{2}$ to 1 in. deep before the product is applied. If the soil is of a loose, sandy nature, it will not be necessary to scarify it. In either case, the ground should be leveled off to eliminate small pockets and depressions. Best results are obtained when the ground is slightly moist. For large grounds a sprinkler tank truck equipped with a power pump will give even and economical distribution. On smaller grounds it can be applied by hand sprinkler cans.

For the first application, on most grounds, one quart per square yard of soil will be sufficient to control dust for a period of one year. Succeeding applications should be less. A petroleum product, this type of dust-allaying agent will kill weeds and similar plant life, and ants and other insects that make their home in the soil.

Indoors

Floor finishes

For the gymnasium, hard maple is the ideal wood for the finished floor. Composition floors do not provide the proper elasticity, and are exceedingly tiring and hard on the feet and legs. A number of reliable chemical com-

panies have introduced what is called a gym floor finish. Floors that have been previously treated with a floor seal, varnish, oil, or wax can easily be prepared for refinishing by scrubbing with a chemical cleanser. This solution is applied to an area 10-ft. square and scrubbed with a floor machine or a long-handled scrub brush.

The chemical action of the cleaner emulsifies oil or wax and removes marks or discolorations. The dirty water may be picked up by means of a floor squeegee and pan and the floor then rinsed with clear water before proceeding to another section. When the entire floor has been cleaned and presents a uniform appearance, it is given a final rinse with a solution that is one part vinegar to seven parts clear water; this solution neutralizes the alkali from the chemical cleanser. Another rinse with clear water only completes the operation. Wax or oil is very hard to remove and a floor so treated should be scrubbed twice and carefully rinsed.

After this thorough washing, the floor should be permitted to dry for 24 hours or until there is no longer evidence of moisture in the boards. The first coat of floor finish is then applied. When the initial coat is dry, the floor is swept thoroughly to remove the dust, and the basketball lines are

painted in. The second coat is next applied in the same manner as the first; i.e., the finish is poured into a wide-mouth vessel into which a lamb's wool mop can easily be dipped. The finish is spread with the grain of the wood in a uniform coat. Most floors require only two coats, but on newly sanded floors three coats are needed. This process of sealing is far superior to oil, varnish, or wax, as it provides an attractive, absolutely non-slippery playing surface that will resist 90 per cent of the rubber burns ordinarily found on gym floors.

Special finishes for gymnasium floors are becoming more and more popular, not only for refinishing an old floor but in keeping a new floor in its original condition. Excessive use of water should be avoided because wood absorbs water and causes unfinished floors to buckle.

Varnished floors are not feasible for gymnasium use. The weight of heavy floor apparatus is carried on casters which would soon pulverize the varnish and leave unsightly track marks.

It is becoming a growing practice to clean and disinfect shower walls and

floors in one operation. A good disinfectant cleaner is one with a chlorine base or its equivalent. A good disinfectant of the emulsified type contains about 10 per cent of good soap, and is also a good de-greaser.

As a preventive for athlete's foot every shower room should have a foot tub containing fungicidal solutions, in the doorways leading to and away from the showers. Infected feet shed skin particles teeming with causative fungi which others pick up on their bare feet. To check the spread of athlete's foot, medical authorities first recommended frequent washing of locker and shower room floors with germicidal solutions. This method was effective with one important limitation. Between applications the floors would be reinfected, and it was obviously impracticable to wash them with fungicidal solutions every few minutes.

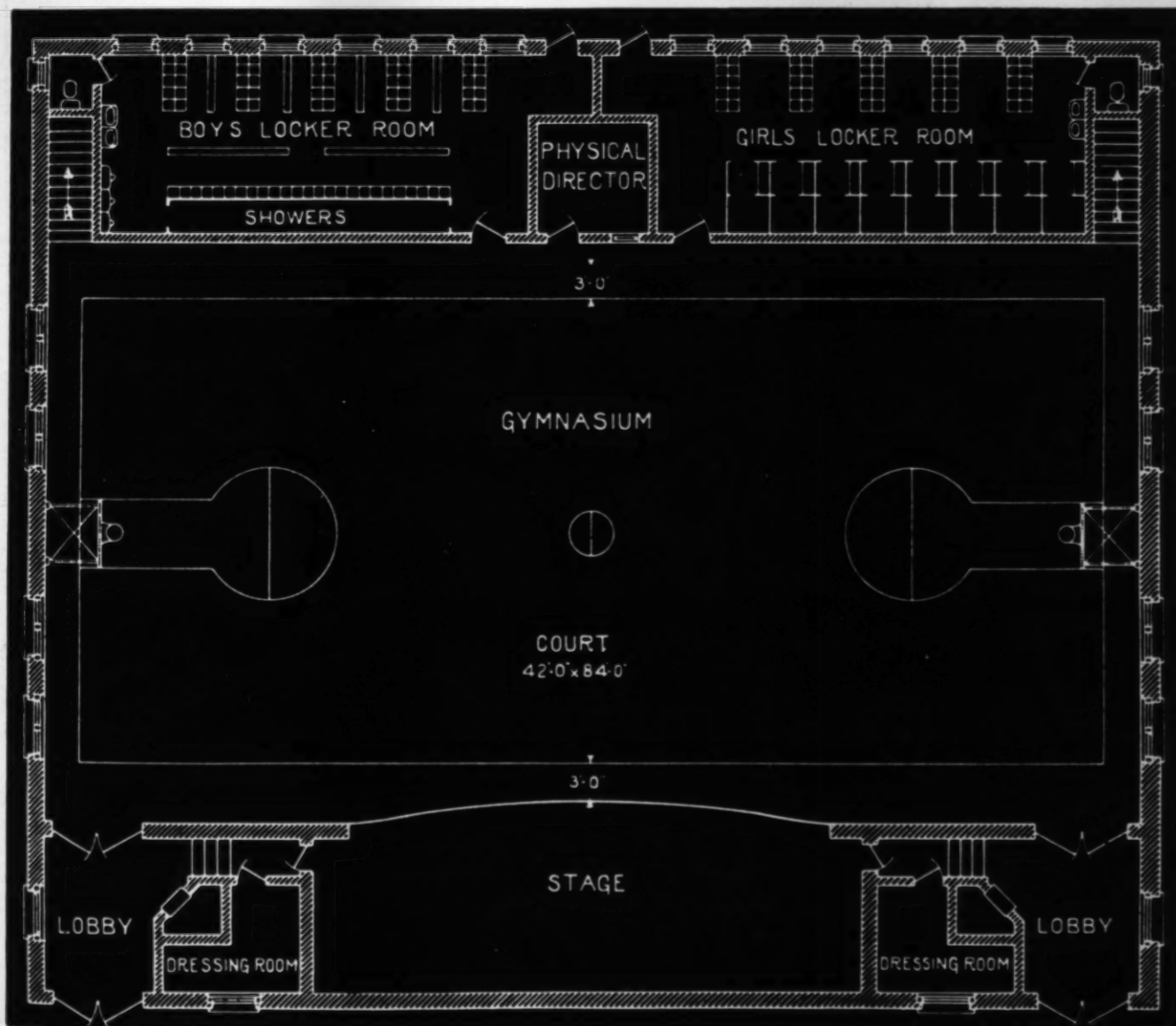
So the foot-tub method was devised. Where a proper material is used in this manner, fungi on the feet are killed. The solution carried out on the floor also kills some of the fungi there.

For the proper use of the fungicidal

solution as a preventive, a large, rubber foot tub was recently developed which appreciably reduced the incidence of athlete's foot. Subsequently, to facilitate the treatment of athlete's foot, a small tub was developed which had the shape of a foot and contained a small amount of solution in which the athlete could soak his foot.

While it is true that a dollar will buy more soap in cake than in liquid form, the dollar's worth of soap in liquid soap will wash many more hands. The inevitable waste which accompanies the use of cake soap must be counted into the cost. Liquid soap, properly dispensed, is ideally sanitary and an aid to the protection of health, because the athlete is the first to touch it. The soap is usually fed from an elevated tank to dispensing valves at the base of the showers or wash basins. In addition to savings on waste and its hygienic implications, liquid soap has several other advantages over the cake type: there is no danger of stepping on it and taking a bad fall; it cannot be thrown on the floor where it may clog the drainpipes, and it eliminates the use of soap dishes.

The auditorium type of gymnasium with a small stage at the side. The auditorium floor when cleared of collapsible chairs is used as the gym floor.





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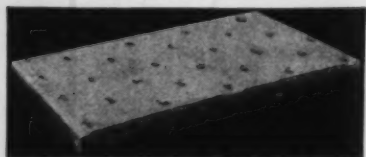
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For tumbling, boxing, wrestling, and as buffers around basketball courts.

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Tennis Courts

(Continued from page 16)

any appreciable amount is on the base when the prime coat is applied, it sticks to the feet during subsequent surfacing operations to the destruction of the smoothness of the base.

The surfacing began with the application of hot asphalt road oil² to the prime base. With a truck distributor this would have been a quick and easy job. By hand it was somewhat difficult. At the beginning of the surfacing process the hand distributor was used, but the rubber squeegee³ method of application was substituted when it was found that a more uniform coat was desirable. In the latter method the oil was heated in open barrels—about one-half barrel at a time to prevent overflow from expansion—poured from buckets upon the base, and smoothly spread with the squeegee. Later, fiber bristle street brooms were used for spreading with equally good results.

In the application of the asphalt oil, regardless of the method used, these precautions must be observed: (1) it must be applied at a temperature of about 200 degrees F and during a hot day, and (2) it must be applied evenly in an amount of one-third to one-half gallon per square yard. As the application of the oil proceeded, sharp gravel, about one-fourth to five-eighths of an inch in size, was broadcast on the hot oil. The broadcasting was done with shovels so shaken that the pea gravel spilled over in an amount of approximately 35 pounds to the square yard. This gravel was smoothed by light brooming and then thoroughly rolled into the asphalt with a one and one-half ton roller⁴ pulled behind a light truck. It was found necessary to broadcast more gravel on the "bleeding" spots.

The tendency of the roller to "pick up" because of contact with the asphalt was counteracted by frequent rubbing with kerosene-soaked rags.

The following morning the surface was thoroughly broomed, the surplus gravel removed, and the roller used

² The asphalt road oil used in sealing the Gooding courts was of the type prepared by cutting heavy asphalt oil with benzine, kerosene or other light oil. It is commonly known as cut-back asphalt. (If emulsified asphalt oil is used, a somewhat different procedure is indicated.)

³ Rubber squeegees were made by stretching innertube over 2 ft. lengths of 4 by 4's. "Y" shaped handles were fitted to the ends of the 4 by 4's, allowing all four surfaces of the squeegee to be used.

⁴ The lighter roller was found more satisfactory for the surfacing work. A special one and one-half ton roller, three feet in height and three feet in width was made by pouring cement in a steel jacket, and adding scrap iron to bring it to weight. Lugs were welded to the inner side of the jacket to prevent it from slipping.

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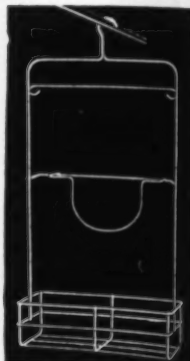
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again. The work proceeded one court at a time. At the finish the entire area was rolled until the roller no longer left any impression. The resulting surface was fairly smooth and a mottled grayish-brown in color. The original plans had called for the application of another surface coat using coarse sand instead of gravel in the process; the surface of the first coat was so promising, however, that the courts were opened for use. It was apparent in the spring that the second coat should have been applied a few days after the first.

The application of the final seal coat was made like the first, but with these differences. In order to fill the small voids between the gravel in the first coat, slightly more oil was used, and broomed thoroughly into the voids. Instead of pea gravel, clean coarse sand, passing a 10 mesh but retained on a 40 mesh screen, was broadcast in an amount of about 25 pounds per square yard upon the hot oil. The smoothing, rolling, brooming, and re-rolling were done in exactly the same way as that for the first coat. The resulting surface was much smoother than the first coat surface, somewhat darker in color, and somewhat less firm. In about ten days the courts were opened for morning and late afternoon play.

Cost of courts

The total cost for four courts, exclusive of fences, was about \$800. As the City of Gooding, the high school student association, and the school district shared costs in the construction of the courts, and as some of the materials were donated, it is impossible to break down the costs with complete accuracy. In the following figures the starred items are estimates, but are intentionally liberal.

150 yards crushed rock.....	\$102.00
150 yards clay*	50.00
300 gallons road oil	21.00
1500 gallons "cut-back" asphalt	165.00
25 yards pea gravel*	15.00
20 yards coarse sand*	35.00
Roller*	21.25
Labor	385.00

It is safe to say that the entire cost including fences was under \$1000. Costs will of course vary somewhat, but they should not exceed \$1000. in any locality.

The advantages of such courts in addition to their low cost are many. They are fast and resilient. Their dark color prevents glare and makes an excellent background for yellow lines. Upkeep is not a problem at all. If rough or "blistered" spots should develop—which is unlikely if two surface coats are applied—it is a simple matter to heat a small quantity of asphalt, apply it, and work coarse sand into it.

Gym Locker Systems

(Continued from page 15)

In actual operation, one unit consists of one full-length locker and three, six, or nine small 20" high lockers. Each member of a class is then assigned to one of the small compartments in a different unit, or group. Thus a student regularly keeps his gym clothes in a small compartment, using the full-length locker for street apparel only while attending the class or taking advantage of the pool. A single padlock is regularly kept on the small locker and transferred to the full-length locker when it contains the student's street garments.

The gymnasium type locker unit is made up of one 9" wide x 12" deep x 60" high single-tier locker and usually six triple-tier lockers 9" wide, 12" deep, and 20" high.

Box Lockers

When a great many outside students use the gymnasium and do not wear complete gym clothes—just gym shoes—a small box locker is all that is necessary to accommodate hats, caps, sweaters, and street shoes

and socks. If locker-room space is greatly restricted, a number of these individual small box lockers may be provided for regular gym clothes, and a small group of double-tier lockers for street apparel while the students are in the gymnasium. This is somewhat of an adaptation of the regular gym locker plan but, of course, is not as convenient or efficient.

The box locker is usually available in a wide range of sizes, and the proper size may be determined by the amount of gymnasium equipment necessary to be stored.

All of the different types of lockers discussed may be secured from any reputable locker manufacturer. After determining the type and quantity of lockers best suited for your gymnasium classes, it is then a matter of selecting the one that will give the longest service with the minimum of upkeep expense—one that is properly designed and constructed to best resist the unusually hard use and considerable abuse to which gymnasium lockers are always subjected.

SCHOLASTIC COACH MASTER COUPON

After checking carefully items desired, this coupon may be sent directly to Scholastic Coach advertising department, 250 East 43rd Street, New York, N. Y., from which point the advertiser will be notified of the requests.

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ON PAGE 40 OPPOSITE THIS SPACE ARE
OTHER LISTINGS AND FORM FOR SIGNATURE

Vitamin Values

(Continued from page 28)

more prematurely they appeared. (Protective foods are foods which are rich in the vitamins, and which serve to protect us from vitamin deficiencies and their attendant disorders and diseases.) He also found that to revise the diets of these patients to include foods that were high in protective foods, and consequently in vitamins, resulted in improvements in the diseases, in relief of their symptoms, and in some cases led to apparent recovery.

The results of Dr. Langstroth's studies are of particular interest and significance in connection with the early and premature decline of athletes, especially professional athletes. An athlete is no more immune to the common degenerative diseases occurring as the result of prolonged, moderate deficiencies than is the layman. In refutation to this theory is the argument that an athlete gets

plenty of healthful exercise—and regular exercise is known to be a wonderful stimulus to health. That is entirely true as far as it goes. But, vigorous physical exercise markedly increases the body's requirement for vitamins, and no provision is made whereby an extra intake is assured. Actually, under such circumstances vitamin deficiencies develop more rapidly than in those engaged in sedentary occupations. A vitamin deficiency is not something that can be "sweated out."

Why is it that a player can have several sparkling seasons, then apparently for no reason at all turn out to be a flop the following year? The answer is that the insidious development of vitamin deficiencies (and probably other nutritional deficiencies as well) has progressed to the point where his physical abilities have begun to mirror the true condition of his body. And try as hard and sincerely as he may to regain his lost form, it is of no avail, outside of an occasional good day.

From the States

(Continued from page 35)

has a pressure that will make it bounce 52 inches and the third has a pressure which makes it bounce 55 inches, the maximum allowed by rule. One noticeable feature in connection with this experimental work is the comparative ease with which players adjust themselves to the different bouncing reactions. This is particularly true when the bounce is 48 inches or 52 inches. It seems to be a trifle more difficult for the players if the bounce approaches the maximum set by rule. Work along these lines is being continued and no final conclusions can be drawn until more data are available. Those who have submitted early reports seem to favor a reaction of from 50 to 52 in.

Early reports on the proposed new method of timing whereby the watch is stopped each time the ball is declared dead, indicate that there are some advantages in the new method when electric wall clocks are used.

H. V. PORTER,
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